Barley stripe mosaic in Saskatchewan in 1977[1]

Arthur W. Chiko

In 1977, barley stripe mosaic (BSM) was detected in 7.5% of the fields of two-row barley *(Hordeurn distichurn)* surveyed in southwestern Saskatchewan. The incidence of plants with BSM in these fields varied from a trace to 13%. The disease was not encountered in any fields of six-row barley *(H. vulgare)* surveyed in this region.

At Regina, about 800 plots of foundation, registered and certified barley, consisting of all cultivars commonly grown in the Canadian prairies, were examined for BSM. The disease was detected only in one plot, which was derived from certified seed of the two-row cultivar Fergus.

Can. Plant Dis. Surv. 58: 29130, 1978

En 1977, la mosa'ique striée de l'orge a ete constatee dans 7.5% des champs d'orge à deux rangs *(Hordeurn distichurn)* visités dans le sud-ouest de la Saskatchewan. La proportion de plants atteints dans ces champs fluctuait de traces a 13%. La maladie n'a été observée dans aucun champ d'orge à six rangs.

A Regina, quelque 800 parcelles d'orge de classes fondation, enregistrée et certifiee recouvrant tous les cultivars d'usage courant dans les Prairies canadiennesont ete inspectées à l'égard de la mosaïque. On n'a pu constater de symptômes que sur une seule parcelle, provenant de semence certifiee du cultivar a deux rangs Fergus.

In a survey conducted in 1975, barley stripe mosaic (BSM) was detected in 45%, 30% and 25% of the fields of two-row barley ***(Hordeurn distichum*** L. emend. Lam.) examined in southern Alberta, southwestern Saskatchewan and southeastern Manitoba, respectively; in each of these regions the disease had been encountered in a similar proportion of two-row barley fields in 1974 (2). In both years, relatively large numbers of two-row barley fields were examined in southern Alberta and southeastern Manitoba but only a few fields were examined in southwestern Saskatchewan. The accuracy of surveys conducted in the latter region was thus questionable. Consequently, an intensive survey for BSM was conducted in southwestern Saskatchewan in 1977. To evaluate the current status of barley stripe mosaic virus (BSMV) in pedigreed seed, barley cultivar verification plots located at the Regina Research Station were also examined for BSM.

The 1977 survey for BSM in southwestern Saskatchewan was conducted from July 5 to 8 along a route of about 800 miles passing through Crop Districts 3, 4, 6 and 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 5 and 15 miles, respectively. Barley cultivar verification plots were examined July 4, when plants in most plots were at the jointing stage. In each field or plot where BSM was detected, a sample of leaves was collected from plants with symptoms and the presence of BSMV was confirmed by infectivity and serological tests (1). Data on the acreage occupied by different barley cultivars in southwestern Saskatchewan were obtained from reports prepared by the Saskatchewan Wheat Pool.

In 1977, BSM was detected in 4 of 53 (7.5%) fields of two-row barley and in none of 13 fields of six-row barley surveyed in southwestern Saskatchewan. In the four fields where BSM was detected, the incidence of affected plants was a trace, 4%, 7% and 13%.

Changes in the cultivar composition of two-row barley grown in southwestern Saskatchewan from 1974 to 1977 were relatively minor; during this period the proportion of two-row barley acreage occupied by the most common cultivar, Betzes, remained essentially constant (77-78%). Therefore, it is unlikely that changes in cultivars were responsible for differences in the proportions of two-row barley fields in which BSM was detected in this region in 1977 and in two preceding years (1974 and 1975). In 1974 and 1975 surveys, estimates of the frequency of occurrence of BSM in fields of two-row barley in southwestern Saskatchewan were probably subject to considerable error because of the small numbers of fields examined. A more accurate estimate of the frequency of occurrence of BSM in fields of two-row barley in this region was probably obtained in the 1977 survey. This survey indicated that BSM is presently of little significance to barley production in southwestern Saskatchewan.

Results of previous surveys suggested that BSM occurred commonly in fields of Betzes barley in southern Alberta (2). Information obtained in the present survey, however, indicated that the disease was not common in

[1] *Contribution No. 836, Research Station, Agriculture Canada, Winnipeg, Manitoba, R3T 2M9.*

Accepted for publication February 27, 1978.

this cultivar in southwestern Saskatchewan. The reason for this apparent difference is unknown.

At Regina, barley cultivar verification trials consisted of varying numbers of plots of 18 of the most common cultivars grown in the Canadian prairies. Each plot consisted of about 3000 plants. Of a total of 792 verification plots examined, 17%, 20% and 63% were derived from samples of foundation, registered and certified seed, respectively, 11%, 26% and 63% were derived from seed samples obtained from pedigreed growers in Alberta, Manitoba and Saskatchewan, respectively, and 33% and 67% were two- and six-row cultivars, respectively. BSM was detected in only one verification plot (0.1% of the plants affected) of Fergus, a two-row cultivar. A total of 81 verification plots of this cultivar was examined. The plot containing diseased plants was grown from certified seed obtained from a grower in Tisdale, Saskatchewan.

In southern Alberta and southeastern Manitoba combined, BSM in two-row barley accounted for losses of about $0.8 million in both 1974 and 1975 (3). Observations made at Regina strongly indicate that growers could avert or minimize losses due to this disease by planting pedigreed seed.

Acknowledgement

I am grateful to Mr. G.R. Boughton for providing information on the composition of barley cultivar verification plots.

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. (in press)..