

# 1984 SUNFLOWER MIDGE SURVEY

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The sunflower midge, *Contarinia schulzi* Gagne', has been a pest of cultivated sunflowers, *Helianthus annuus* L., in the Red River Valley of the North since 1971. This insect has been sporadic in terms of when and where it has been a problem. During some years midge damage has been widespread; in others the damage has been restricted to a rather small area. During the late 1970s, the sunflower acreage and midge damage increased significantly. In 1979 and 1980, the midge caused significant localized economic damage over a large portion of the Valley and caused widespread concern about the feasibility of growing sunflowers in some of the hardest hit areas.

In 1981, NDSU entomologists conducted a survey which determined the range and extent of damage caused by the midge (Grinaker, 1981). This survey concentrated in midge-affected areas of North Dakota and adjacent areas of Minnesota. In 1982 and 1983, participation in the survey was expanded to include entomologists from Agriculture Canada, University of Minnesota, South Dakota State University and North Dakota Department of Agriculture, who intensified the survey in their respective states and provinces. Results of these surveys (Kopp and Busacca, 1983 and Busacca and Kopp, 1984) showed the range of the midge had expanded slightly since 1981 and that the areas of heavy midge damage had shifted.

## Methods and Materials

This year's survey was conducted in a manner similar to the previous years'. Sunflower fields were examined for the presence of midge larvae or larval damage, and if present, a rating value was given to reflect the economic severity of the infestation. The field rating system is shown in Table 1. The 1984 sunflower midge survey was conducted during the last week of August through mid-September. A total of 427 fields were evaluated in southern Manitoba, eastern North Dakota, western Minnesota and northeastern South Dakota.

Table 1. Field Rating Scale for the Sunflower Midge Survey

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- |   |                                                                                                                                                                                                                                         |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | - Midge not detected in the field.                                                                                                                                                                                                      |
| 1 | - Midge present - Midge larvae present or evidence of midge larval activity in field margins and of no economic significance.                                                                                                           |
| 2 | - Moderate midge infestation - Sunflower heads showing deformation in the field margins with damage extending less than 100 ft. from the field margins. Yield reduction apparent in the margins but little damage throughout the field. |
| 3 | - Severe midge infestation - Sunflower heads deformed throughout large areas of the field and beyond 100 ft. in from the margins. Yield reduction expected throughout the field.                                                        |
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## Results and Discussion

The area in which the sunflower midge was detected has expanded westward in North Dakota. The new area involved included the eastern half of LaMoure and Dickey Counties and all of Ransom, Sargent and Richland Counties (Figs. 1 and 2). There has been no significant expansion to the north of this new area compared to the 1983 survey. The 1984 range remained similar to the 1983 range in Canada. Midge populations were not detected in South Dakota this year. The midge was found throughout Minnesota in all sunflower growing areas.

This year's survey also showed that although the range of the midge seemed to be expanding in some areas, the damage it caused declined from levels of 1983. In most of the fields surveyed this year, damage was restricted to the flower bracts. Very few fields had gnarled heads and gnarling was restricted to a few plants near the field margin. There were so few midge in many areas in Minnesota and along the western boundary of North Dakota that it was difficult to detect their presence. The apparent increase in the range of the midge in southern North Dakota is partially the result of intensified survey efforts there during 1984.

The results of this year's survey should be encouraging for many sunflower growers. Midge damage to

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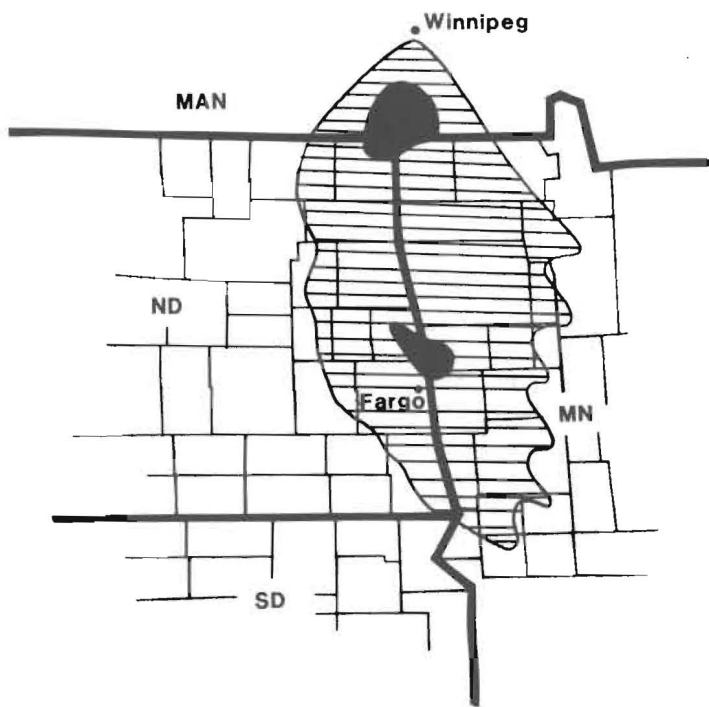


Fig. 1: Sunflower Midge Survey 1983.

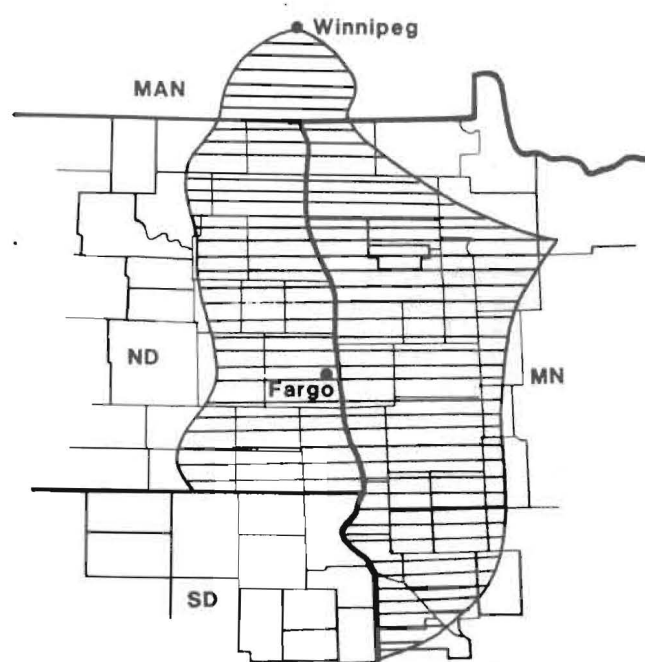


Fig. 2: Sunflower Midge Survey 1984.

sunflowers had continued to decline since 1981 and we did not observe a single field that sustained economic loss from the midge during 1984. This trend suggests that the sunflower midge should not cause significant damage to the 1985 sunflower crop.

This conclusion does not mean that the sunflower midge will never be an economic problem again. The midge evolved with wild sunflower and only recently developed population levels high enough to cause economic loss to cultivated sunflowers. The midge will be present as long as there are sunflower plants for the insect to complete its life cycle on; therefore, it will continue to be a potential pest. Warm, moist conditions favor survival of the midge. If several warm, moist years occur in areas of heavy sunflower production, midge populations could increase and cause some damage in those areas.

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