Overwintering Wheat Midge Populations Larger in 1998

The overwintering wheat midge population in North Dakota is up slightly from what it was last year, according to a survey conducted by the department of entomology at North Dakota State University. Soil samples collected last fall reveal that the largest midge population is still in the northeast quarter of the state, where more than 1,200 larvae per square meter were found in four hot-spot areas.

One such spot is in northwestern Nelson and southeastern Ramsey counties, another near Wolford in Pierce county, a third near Perth in Towner County, a fourth in southwest Bottineau County near Gardena.

Areas not quite as hot but still requiring vigilance by wheat farmers are located further south, one in southern Griggs and northwest Barnes counties, another in north central Stutsman County, and a very small one on the border of Foster and Eddy counties south of New Rockford. In these places from 500 to 1,190 midge larvae were found in each square meter of soil.

"We recommend that farmers in areas where cocoons exceeded 1,200 per square meter should consider growing wheat only if they are prepared to monitor their fields for adult midge, and to budget for and make timely insecticide treatments where warranted," says Phil Glogoza, entomologist with the NDSU Extension Service. "Without these measures, undetected or uncontrolled infestations may result in significant economic losses."

Densities of 600 or more cocoons per square meter can cause significant damage and economic loss to a wheat crop when midge emerge during the heading stage of wheat, says Glogoza. Farmers growing wheat in areas with these densities will need to be very vigilant.

"Weather conditions in the spring and summer of 1998 will be very important in determining if economic injury will actually occur," cautions Mike Weiss, entomologist at NDSU. "If wheat is planted so that heading coincides with emergence of the midge, and weather conditions are favorable for the female to lay eggs, producers will need to monitor fields to determine if a pesticide application is necessary."

Wheat growers are encouraged to plant wheat as early as possible, using an early-maturing cultivar suitable to their region. When planted early, wheat can reach the flowering stage before significant levels of midge have emerged. Wheat is susceptible to midge infestation from the time the head emerges from the boot until 80 percent of the primary heads have anthers visible.

"Where we have had problems with midge, the infested wheat was planted during the last two weeks of May and was generally heading in early to mid-July, during the peak emergence period for midge," says Glogoza. "By monitoring spring temperatures, we should be able to alert farmers to that time when planted wheat will be at greatest risk to midge."

Other tactics wheat farmers may want to consider when planning for wheat midge management include increasing seeding rates and using tram lines. Increased seeding rates reduce tillering and secondary heading. This promotes a window of time for heading and flowering that is narrower than normal, limiting the time available for midge to deposit eggs on heads in a field. The tram lines, established at planting, permit easier use of ground application equipment if treatments are necessary later in the season.

This year midge populations increased from 1997 levels, says Glogoza, mainly because growing conditions were more favorable for midge activity last summer than they were in the summer of 1996. High soil moisture, delayed planting
and calm conditions during adult midge emergence contribute to successful survival, to egg laying and to the resultant larval infestations.

"In northeastern North Dakota, cool and wet conditions early in July made it difficult to find adult midge in fields," says Glogoza. "By mid-July, warmer, calmer evenings created conditions where field scouting found adult midge at numbers from 1 per 4 wheat heads to 1 per 10 wheat heads, numbers equal to or close to the treatment threshold of 1 midge per 5 wheat heads."

Adult midge are active at about 9 p.m. when air temperatures exceed 59 degrees Fahrenheit and wind speed is less than 6 miles per hour. When temperatures are less than 59 degrees, or wind speed is greater than 6 miles per hour, adult midge are not actively laying eggs up on the primary wheat heads.

Weiss has looked at whether the number or hours when conditions are favorable for wheat midge flight-and egg-laying-might be a predictor of larval infestations in the wheat head. Fewer hours of activity by the adults in 1996 was one suggested explanation for the reduced size of the midge population in 1997.

"Interestingly, in some of the areas where high numbers of midge cocoons were detected, the weather data indicated that fewer hours were available for egg laying in 1997 than in 1996, when populations were smaller," says Weiss. "This may indicate that hours available for egg laying may not be a good predictor of midge cocoons in the soil."

The wheat midge soil survey was carried out last fall by NDSU Extenson Service county agents under the direction of the department of entomology at NDSU, with the financial support of the North Dakota Wheat Commission and Dow AgroSciences.

[EDITORS: FOR A COLOR MAP OF WHEAT MIDGE INFESTATION IN NORTH DAKOTA, CONTACT YOUR COUNTY OFFICE OF THE NDSU EXTENSION SERVICE, OR CALL THE DEPARTMENT OF ENTOMOLOGY, NDSU, AT 701-231-7581]

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