

ORANGE WHEAT BLOSSOM MIDGE MONITORING KIT

The Wheat Midge Problem

One of the potentially most damaging pests of spring wheat is the orange wheat blossom midge (wheat midge). Larval damage within a single head varies from underdeveloped and deformed kernels to aborted kernels. This damage lowers yield and reduces grade. The impact of the wheat midge can be huge, e.g. over \$150 million on the Canadian prairies in 1995.

To optimize control of the wheat midge, growers must be able to decide whether insecticide applications are necessary, and if so, to time them precisely. Sampling of overwintering cocoons in the soil is ineffective in estimating the percent damage at harvest in the following summer. Counting the number of wheat midges on heads after sunset can be used in decision making, but it is relatively inaccurate for the novice scout.

Finally, a Monitoring System that Works

Researchers at Simon Fraser University recently identified the female sex pheromone of the wheat midge. Working with Agriculture and Agri-Food Canada and Phero Tech Inc., they developed a target-specific monitoring system. The system uses green delta traps, that are not visually attractive to most insects. Thus most of the captured insects will be wheat midge males that are attracted to the species-specific pheromone inside the traps. Captured males are clearly visible as orange spots on the white sticky inserts inside the trap. Because few other midges are found in wheat fields, each orange spot can be reliably assumed to be a wheat midge.

Using this system, researchers found a highly significant correlation between the number of captured males and the percent damage at harvest (sloped line in Figure 1). The horizontal line in Figure 1 marks the division between a No. 1 and a No. 2 grade product. Therefore, if cumulative catches 3 days after heading exceed 9-10 midges per trap, an insecticide application may be necessary. Consult your local agricultural advisor with regard to timing and number of applications.

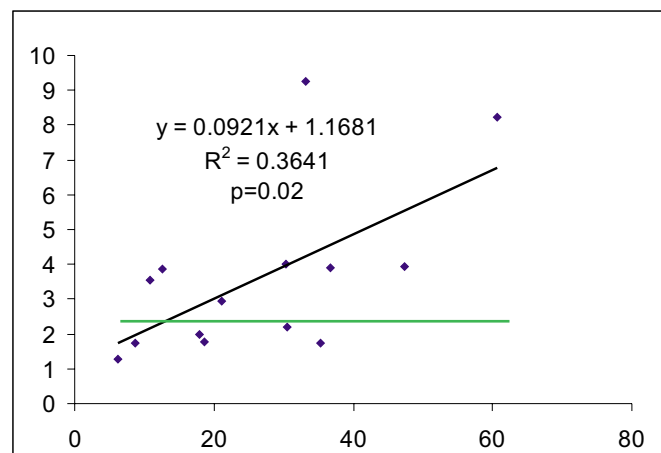


Figure 1. Relationship between the cumulative number of adult male wheat midges per trap three days after heading and the percent damage at harvest (courtesy L. Mircioiu, Simon Fraser University). Each dot represents a separate field in east-central Saskatchewan, average of six traps per field.

Trap Assembly/Lure Handling

Hammer a 60 cm (2 ft) stake (not provided in the kit) into the ground, so that the top is just above the canopy of the crop, where the midges like to fly. As shown in Figure 2, fold the green delta trap along the scored lines. End panels should slope inward. Attach the trap to the top of the stake with the nail and washer provided. Hang the lure inside the trap, by inserting the T-shaped end of the holder into the hole near the top of the trap. Do not allow the lure to contact the sticky insert, as this will interfere with its performance. Wear disposable rubber gloves when handling the lures to avoid contaminating the skin. Once the lures are installed remove the gloves and dispose of them. Do not throw them on the ground, as they may have absorbed pheromone and will attract midges away from the traps. Peel the release paper from the sticky insert, and place it sticky side up on the bottom of the trap. Fold the sides of the trap together. The larger tab should be folded over the shorter tab. Secure the two ends with the two paper clips provided.

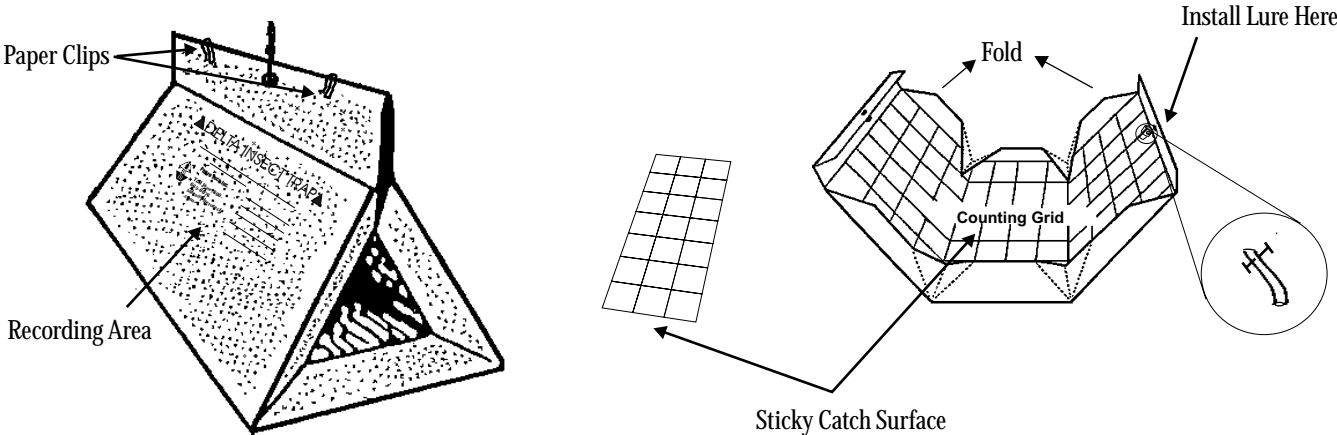


Figure 2. Trap assembly and lure placement.

Trap Placement and Density

At least three traps should be placed in a 64 hectare (160 acre) field. Special attention should be given to fields with previous midge history and low-lying areas where high soil moisture may favor midge development. Place traps at least 25 m (75 ft) within the field, and at least 100 m (300 ft) apart. Traps should be placed in fields 5 days before heading. If you place traps in the field before that, e.g. to see if midges are present, change the inserts 5 days before heading.

Monitoring

You can examine the traps at any time for captured male midges (orange spots). Beginning 5 days before heading examine them every 1-2 days to determine if the action threshold of 9-10 captured males per trap is met or exceeded (Figure 1). Take the average of all of the traps in a field to make this calculation. Make the final determination at 3 days after heading to leave time to apply insecticide before the wheat flowers, and the new midge larvae migrate to a protected position within the heads.



Figure 3. Assembled trap on wooden stake.