

# SEED MATTERS

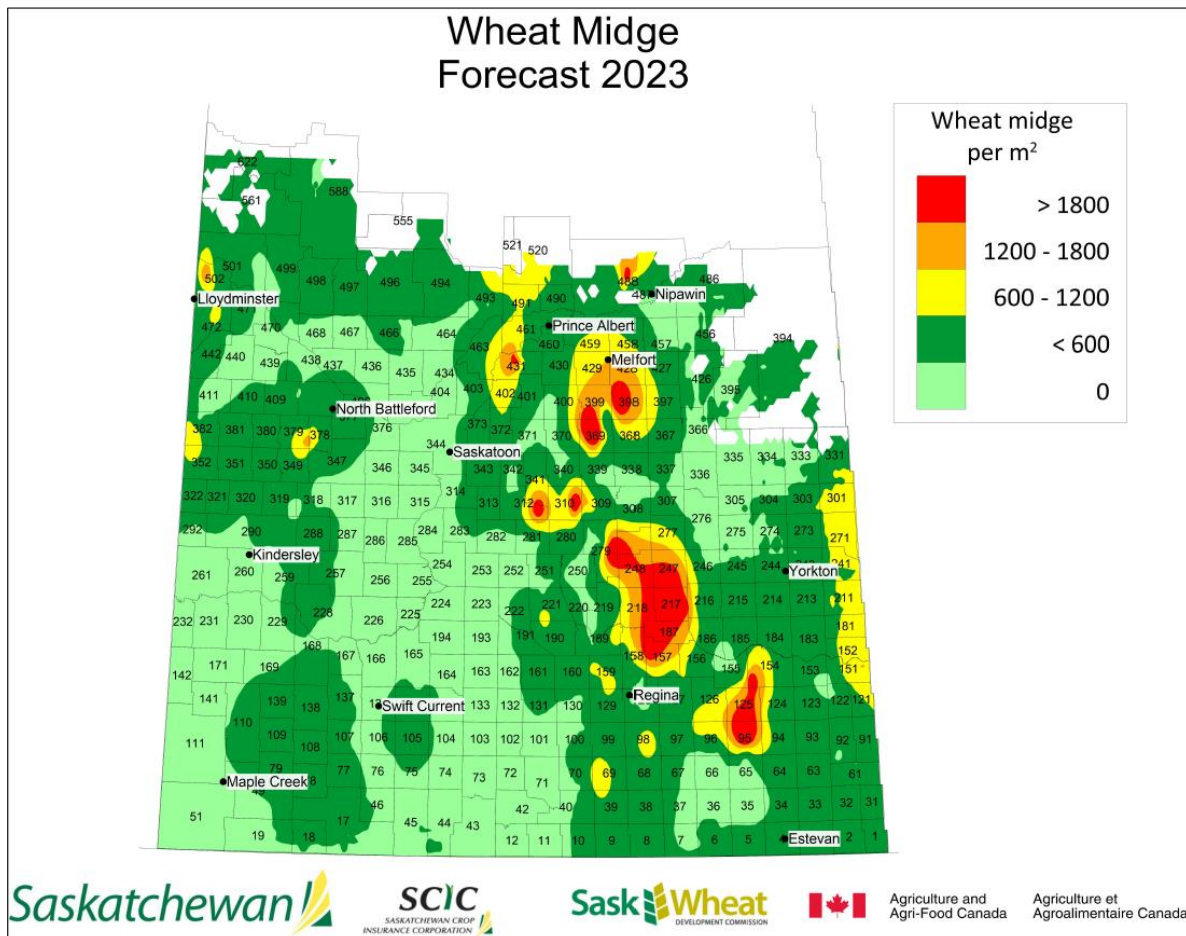
## Wheat midge tolerance trait more important than ever

Wheat varieties with genetic resistance to orange wheat blossom midge became commercially available more than 10 years ago. Denoted by the VB (varietal blend) designation after their varietal name, many midge-tolerant varieties are now available in all classes of spring wheat as well as durum with all the attributes of the most popular regular varieties.

Insecticide control options have been dramatically diminished and favourable weather can increase wheat midge making midge-tolerant varieties more important than ever in the 2023 growing season and beyond.

### Wheat midge forecast 2023

The Saskatchewan Wheat Midge Forecast Map for 2023, based on soil core data from 2022, shows increased numbers of wheat midge as compared to the forecast from the previous year. The highest numbers, greater than 1800 wheat midge per square meter, were recorded between Melfort and Regina and then southeast to around Corning, Saskatchewan.





Much of the province shows fewer than 600 wheat midge per square meter (darker green), but provincial pest specialist James Tansey cautions even in areas recording relatively small numbers, damage can still be significant.

“Timely rains in May can really amplify wheat midge emergence and damage,” notes Tansey, who emphasizes that the 345 samples collected across the province are only meant to provide a regional representation of the potential threat.

“Don’t turn your back on wheat midge,” advises Tyler Wist, a research scientist in field crop entomology with Agriculture and Agri-Food Canada. Wist’s work with pheromone traps, that last year were monitored by willing SeCan seed growers across Western Canada, has sometimes demonstrated higher numbers of wheat midge flies than what soil core samples predicted. (Check out #midgebusters on Twitter.)

### **Insecticide pulled from market**

In December 2020, the Pest Management Regulatory Agency (PMRA) announced the cancellation of all production and formulation of insecticides containing Chlorpyrifos, the active ingredient in products such as Lorsban, Pyrinex, Nufos and Citadel. Retailers had until December 2022 to sell remaining inventory to producers. 2023 is the last year the product can legally be applied.

The only other chemistry registered for wheat midge control is Dimethoate, available in products such as Lagon and Cygon. Chlorpyrifos was the preferred insecticide and was considered more effective than Dimethoate as it affected the eggs as well as the adult midge whereas Dimethoate affects only adults. Also, with the Dimethoate products, there are limitations to compatible tank mixtures with other pesticides, such as fungicides.

Wheat midge control with an insecticide is particularly difficult to start with. Extensive scouting is needed to determine whether fields warrant an application and the application window for best control is short. Growing a midge-tolerant variety eliminates the need for scouting, spraying and worrying.

### **Preserving the technology**

When research scientists discovered the gene that confers wheat midge tolerance, they realized the need to preserve this defense mechanism. Large acreages of midge-tolerant varieties would put enormous selection pressure on wheat midge to evolve and overcome the tolerance.

The solution is a varietal blend. Each wheat midge tolerant variety is certified to have between five and 15 per cent of a variety susceptible to wheat midge. For instance, AAC Hodge VB includes five to 15 per cent AAC Hockley, which is considered the refuge variety. Refuge varieties are chosen to be as similar as possible to the midge tolerant variety – the same height, maturity and disease resistance.



Having the refuge variety greatly decreases the selection pressure for wheat midge to overcome the tolerance gene. However, it also means that growers can't grow generation after generation of farm-saved seed since the refuge variety is likely to decline over several generations.

The technology must be preserved because there is no plan B. No other genetic resistance is known. For a better understanding of how the refuge variety works, check out [www.midgetolerantwheat.ca](http://www.midgetolerantwheat.ca).

### **When to buy new seed**

Farmers buying certified seed of a varietal blend are required to sign a stewardship agreement whereby they promise to only keep seed for one generation past Certified. On the surface this may seem to indicate the need for new seed every second year, but that's not actually the case.

"A producer can bin a multi-year supply from the first year of production for their own use," notes Todd Hyra, western business manager for SeCan. Of course, seed can lose germination in storage and this should be checked before each growing season.

"After two or three years with the same variety, a producer may be ready to move on to a new improved variety anyway," says Hyra.

### **Slower than expected demand for varietal blends**

Heavin Seed Farms at Melfort has been growing variety blends since they first became available. Ryan Heavin says based on wheat midge larvae counts per head, some of their wheat fields would have lost 10 per cent yield last year if they hadn't been midge tolerant.

However, going into the 2023 growing season, he reports a slower uptake than expected for varietal blends.

"With wheat midge pressure sporadic in recent years, it doesn't seem to be top of mind for many producers," says Heavin. "With wheat midge forecast to be on the increase and with Lorsban being phased out, planting varieties with genetic resistance would seem to be a logical precaution."