

MANAGE RESISTANCE*Now*

Protect your land, one field at a time



HOW RESISTANCE DEVELOPS IN Bt CORN

Resistance is a natural and inevitable process, and can develop against any pest management tool. Using a variety of tools will prolong the life of Bt traits but some insect pests have recently developed resistance to Bt traits in corn in Canada, including European corn borer (limited cases in Maritime provinces)¹, corn rootworm and western bean cutworm. Two additional insects in the United States have demonstrated resistance to at least one Bt corn trait – corn earworm and fall armyworm.

**Bt corn
planted**

**Not complying with refuge requirements
allows the resistant population to multiply.**

**Susceptible
insect**

**Resistant
insect**



**Survivors reproduce
over time**

A small number of insects in the population are naturally resistant to the Bt trait.

When corn with the Bt trait is initially used, it controls almost all of the insects in the population.

Survivors are resistant to the Bt trait and lead to the next generation of resistant insects when they mate with other resistant insects.

SELECTION PRESSURE

While the majority of any pest population starts out as susceptible to the Bt trait, some portion of the insects will naturally be genetically resistant. How quickly this genetic resistance evolves in a population is determined by the selection pressure on the pest.

Selection pressure refers to the factors that cause a population to change genetically. Having a field planted with 100 percent Bt corn would likely kill all of the susceptible pests, leaving only the resistant ones to produce resistant offspring in the next generation. This is a very high selection pressure and must be avoided because eventually resistant pests come to dominate the population, meaning resistance had set in. Eventually, resistant pests dominate the population, and the insect may be just as prevalent in Bt corn fields as they are in non-Bt corn fields.

Resistance management is about reducing selection pressure while still making sure the crop is adequately protected. Resistance development is inevitable, because growers will always need to control pests, and pests are always working to overcome this control leading to resistance. However, there are many ways to slow down the development of resistance.

Any control action will select for resistant individuals. However, there are many ways to slow down the development of resistance.

For strategies and information on managing resistance, please refer to the factsheets **How to Manage Insect Resistance in your Bt Corn Crops** and **Managing Insect Resistance Through Refuge Planting** for best management practices, or contact your crop advisor.

¹ <https://www.cornpest.ca/bt-corn/bt-corn-products-traits-available-in-canada-as-of-may-2019/>

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For more information, visit **ManageResistanceNow.ca**

This information is brought to you by CropLife Canada and the Canadian Corn Pest Coalition.

