Colorado Potato Beetle --- A Pesticide-Resistant Pest

By Ray Novitske, Fairfax Master Gardener

If you ever wondered if there is such a thing as a super bug — an insect pest that has multiple generations a year, causes a lot of damage to many different crop plants, and becomes resistant to pesticides, stop wondering. Let me introduce you to the Colorado Potato Beetle. This destructive little pest’s diet is not limited to potatoes. Anything in the nightshade (Solanaceae) family, including nightshade weeds, peppers, ground cherries and eggplant are on its menu.

The Colorado Potato Beetle, *Leptinotarsa decemlineata*, was thought to have originated in Mexico. Some older literature still states this. However, recent DNA testing and historical records show it is actually native to the western United States. It was a harmless insect that fed on buffalo bur, a nightshade weed that grows on the eastern foothills of the Rocky Mountains (think Colorado). When settlers moved West with non-native vegetables, the pest found their potatoes in the garden plots to be a tastier treat.

It was first discovered destroying potato crops in Nebraska in 1859 and followed the potato fields to eventually reach the East Coast in the late 1800s where it was not previously found. It is now common throughout North America. Europe banned importation of American potatoes in an effort to keep the pest on our shores.

If you are ever dismayed at the many European and Asian plant diseases and pests arriving here and wreaking havoc, note that the tables are turned on this pest. After success at keeping the insect out of Europe, it gained a foothold in France. Americans during World War II brought it there, and it is now found throughout Europe. Today, it continues to munch its way eastward through Asia.

The adult beetle is plump-looking and oval-shaped with a hunchback hard shell. It is 1/3 inch and mostly light yellow or tan with 10 black stripes lengthwise on its wings. The young larvae are smooth, soft-bodied and humpbacked, with two rows of black spots along each side. When larvae first hatch, they are bright red with black heads, and as they mature, turn pink to salmon colored with black heads.

Adults spend winters 5 to 10 inches underground near their favorite plants and emerge in the spring around April and May. They eat for a short time then mate. Females lay clusters of 10 to 30 orange-colored eggs on the undersides of tomato or potato leaves. The larvae hatch and begin feeding on the leaves. After four instars, the larvae drop to the soil, burrow in and pupate into adults. There can be two, or possibly three generations each year in our climate since they can develop rapidly in warm summers.
The beetles are not very mobile but can fly greater distances if the temperatures are warmer than 80 degrees. Farmers will dig trenches as a preventative since the beetles are more apt to crawl or walk into their fields from nearby hatch or emergence areas.

Control is difficult with pesticides because over time, this insect has developed resistance to every synthetic pesticide. Carbaryl (Sevin), Spinosad and Neem are effective for control at the larval stage, but not against adults. They should not be applied to the flowering areas to avoid killing pollinating bees.

The Colorado Potato Beetle does have a few natural enemies, but they should not be counted on to provide adequate protection because of their limited interest in the beetle. Stink bugs and lady beetles will prey upon the beetle’s eggs.

The best protection the home gardener can provide is by handpicking them off plants since the slow moving beetles do not disperse very far. Drop them into soapy water to destroy them. Examine the plants often on the underside of leaves to locate and crush the eggs, preventing later generations. Rotate the potatoes, tomatoes and eggplant to different parts of the garden each year. You can also use floating row covers to exclude the beetles from your crops.

With its unique ability to adapt to pesticides faster than the industry can develop them, control of this beetle is not easy. Fortunately, with vigilance and the use of simple non-chemical techniques, we can reduce and prevent damage to the crops in our gardens.

References
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