



URI COLLEGE OF THE
ENVIRONMENT AND LIFE
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CENTER

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COLORADO POTATO BEETLE

The Colorado potato beetle is a serious pest of potato and eggplant through the USA and eastern Canada, as well as much of Europe and Asia. It feeds on the leaves of several solanaceous plants and is an occasional pest of tomatoes. Many beetle populations have developed resistance to the pesticides that have been widely used against them.

Description

The mature larva is a red to orange soft grub about ½ inch long. It has a black head, black legs, and, when large, two rows of black spots on each side of the body. The larvae are often found either on the underside of leaves or at the top of the potato plant. The adult is a distinctive yellow and black striped beetle: ten black stripes run along the length of the wing covers. The adults are about 1/8 inch long. Orange-yellow eggs can be found in clusters of about 20 on the undersides of leaves.

Life Cycle

The beetle overwinters as an adult in the soil. It emerges early in the spring and typically walks to find new host plants. After feeding and mating, females begin laying eggs over a 4-5 week period. Eggs hatch in 4-9 days and larvae begin to feed immediately upon emergence. The larvae go through 4 molts over a period of 2-3 weeks before entering the soil to pupate. The new adults then emerge in 5-10 days and the cycle is repeated through a second generation.

Damage

Adults and larvae both feed on host plants. Adult damage is generally considered less severe, except in cases where they "stem" young host plants early in the season; these severed plants often die. Moderate plant defoliation has no impact on yield, particularly if it is early in the season. However, potato beetles are frequently sufficiently abundant to totally defoliate plants, often killing them prematurely.

Control

There are several effective means of dealing with this pest, including cultural, biological, physical and chemical techniques, several of which work best in combination.

Cultural: Cultural techniques include the use of early plantings of fast-maturing potato varieties that can be harvested before beetle damage becomes significant. If potatoes are planted very early (in early-April) so that plants bloom before June, beetle damage will

PESTICIDES ARE POISONOUS!! Read and follow all safety precautions on labels. Handle carefully and store in original containers out of reach of children, pets, or livestock. Dispose of empty containers immediately, in a safe manner and place. Pesticides should never be stored with foods or in areas where people eat.

When trade names are used for identification, no product endorsement is implied, nor is discrimination intended against similar materials. Be sure that the pesticide that you wish to use is registered in the state of use.

The user of this information assumes all risk for personal injury or property damage.

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occur too late to affect yield. Use an early maturing variety and aim for an early-July harvest. An alternative is to delay planting so that potatoes emerge after populations of overwintered adults have declined. If potatoes are planted late (in mid-June), most beetles will have left the area before plants emerge. Again, use an early-maturing variety so that the crop will mature before October. Straw mulch can also delay beetle development, as well as enhance biological control.

Biological: Several natural enemies of the Colorado potato beetle can help reduce the pest population, but none has yet been found that alone can control this pest. Potato beetle eggs and larvae are preyed on by two kind of stink bugs: the spined soldier bug and the two-spotted stink bug. Ladybird beetles ("ladybugs") feed on eggs of potato beetles, and a parasitic fly and a fungus can attack potato beetles. Natural enemies may be protected by use of a microbial insecticide, *Bacillus thuringiensis*, var. *tenebrionis*, that is toxic to the Colorado potato beetle but not toxic to the beneficial parasitic insects. This bacterium is most effective when used against young larvae and should be used starting when eggs begin hatching. Also, it is more effective at warmer than at cooler temperatures because insects feed faster as temperature increases.

Physical: Ditching is an old approach that can be used by home gardeners. It involves digging a ditch with steep sides lined with sheet plastic around the perimeter of a field. Beetles walking to crops from overwintering sites fall into the ditch and are unable to climb or fly out. With small numbers of plants, hand-picking of adults and egg masses then dropping them into a container of soapy water can also be very effective. Lightweight row covers can be placed over plants as a barrier to prevent adult beetles from colonizing the plants.

Chemical: Small larvae are most easily killed by insecticides, large larvae are more difficult to kill, and adults are hardest to kill. Insecticides are thus likely to be more effective if applied when most of the beetle population is in the early larval stage. Chemical controls have become difficult because the Colorado potato beetle is now resistant to most common garden insecticides, such as carbaryl (Sevin) and diazinon. Rotenone remains effective and is commonly used against this pest, although it also kills the beetle's natural enemies. Neem, a botanical insecticide based upon the extracts from a tree, has also been shown to be effective against the beetle. Pyrethrins, a broad-spectrum insecticide derived from dried chrysanthemum flowers, is most effective at cool temperatures and less effective as temperature increases. Be sure to follow directions on the label of any product.

By Dr. Richard A. Casagrande, URI Department of Plant Sciences, 1999; Ohio State University Extension