

# Organic Solutions for Colorado Potato Beetles

## A Factsheet from Toxic Free NC

### About Colorado Potato Beetles

The Colorado potato beetle is a common pest of the “nightshade,” or Solanaceae family of plants. These include potatoes, tomatoes, eggplants, tomatillos, tobacco, peppers and petunias. Both adults and larvae eat the leaves of these plants, and can kill a lot of leaves, hurting the plant or even killing it.

Colorado potato beetles are very difficult pests to control. They have developed resistance to most pesticides and have few natural enemies.

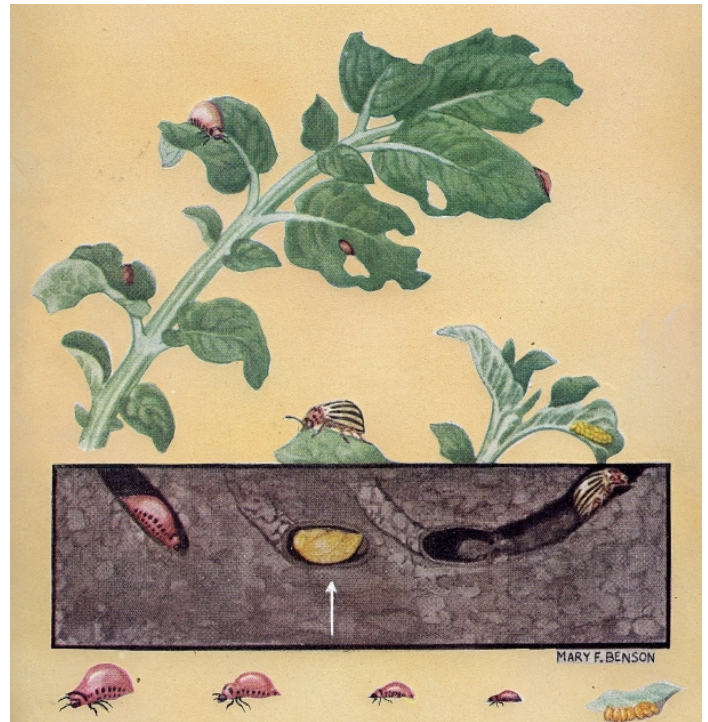
The tips below are designed to help you manage the pests if they become a problem in your garden. Sustainable pest management strategies usually work best when used together. Think about your garden, your resources, and your time, and put several of these tips together for a plan that works for you.

### Identifying Colorado Potato Beetles

Adult Colorado potato beetles are oval shaped and about 1/3 inch long. They are yellowish-orange with 10 bold black stripes running down the length of their backs. Larvae are soft-bodied, humpbacked, and reddish-orange with a row of black spots along their sides. Eggs are laid in clusters on the undersides of leaves and are bright yellow.

### Life Cycle

Adult Colorado potato beetles hibernate in the soil in and around the garden all winter, and come out hungry and ready to eat in the early spring, just as the potato plants are coming up. After mating, they lay their eggs on the undersides of leaves. The eggs hatch in 5-10 days and the larvae eat plant leaves for 2-3 weeks before digging back into the soil to pupate. There are usually 2-3 generations per year.



**Life cycle of a Colorado potato beetle.**

Photo credit: Art Cushman, USDA; Property of the Smithsonian Institution, Department of Entomology



**Colorado potato beetle eggs hatching with brand new larvae.**

Photo credit: Whitney Cranshaw, Colorado State University

## Prevention

**1) Grow healthy organic plants.** Strong, healthy plants can handle some damage from Colorado potato beetles better than weak, struggling plants. Make sure that your crops are getting enough sunlight and water and that the soil is well-drained, rich in nutrients, and has plenty of organic matter.

Research has shown that potato plants growing in soil fertilized with manure are less likely to be attacked by Colorado potato beetles than those grown in soil fertilized with chemical fertilizers.

**2) Plant early varieties.** By choosing a potato variety that matures in less than 80 days, you may be able to avoid the second generation of Colorado Potato Beetles that comes out in the summer. Check seed catalogs for the best varieties and maturity dates for your area.

**3) Mulch with straw.** A thick layer of straw mulch underneath your crop can confuse adult potato beetles that are coming up out of the soil to eat, making it harder for them to find your plants.

**4) Use row covers.** Keep Colorado potato beetles from finding your crop by covering your plants with a light weight “floating” row cover such as Reemay. These materials (as opposed to plastic or heavier fabrics) allow water, air, and sunlight to get through. They can be found at garden supply stores or ordered from seed catalogs.

The covers can lie directly on the plants (the plants will lift the cover as they grow), or you can support the covers with wire hoops. The trick is to keep the edges of the covers tightly buried or weighted so that the Colorado potato beetles cannot get in.

Covering your crop works best in soil where Colorado potato beetle has not been a pest in the past. If you have adults spending the winter in your soil already, row covers will keep them in instead of out!

## Getting Rid of Colorado Potato Beetles Without Toxic Chemicals

**1) Scout and hand pick.** Hand picking Colorado potato beetles and their larvae early in the season can greatly reduce their numbers - every beetle you kill in the Spring is one that will not make baby beetles later! Keep a close eye on your plants. Inspect often by looking at the undersides of the leaves for egg clusters, and at the tips of new growth for larvae.



**Colorado potato beetle eggs.**

Photo credit: David Cappaert, Michigan State University



**Close up of Colorado potato beetle larva.**

Photo credit: Jessica Lawrence, Eurofins Agrosience Services



**2) Plant a “trap” crop.** A trap crop is one planted to lure the beetles away from your main crop. For instance, if you have had a problem with Colorado potato beetles on your tomatoes in the past, next year plant potatoes on the edge of the garden early in the season to lure the beetles coming out in the early spring. Later, but before the first generation of new larvae heads underground to pupate, kill the “trap” potato plants along with the pests by sealing them all together into garbage bags and leaving them in the sun to bake for a few days. Then, plant your tomatoes in another part of the garden.

**3) Attract natural enemies.** Even though the Colorado potato beetle has few natural enemies, it can’t hurt to host the ones that do exist! Attract beneficial insects and other helpful creatures to your garden and they’ll do some of the dirty work for you. Pollen and nectar plants with small flowers, such as wildflowers and herbs, will attract parasitic wasps. Birds, spiders and predatory beetles like to live in perennial herb and flowerbeds and small shrubs near the garden.

**4) Bring in predators.** Spined soldier bugs, parasitic wasps, and parasitic nematodes that will attack the adults, larvae, or pupae of Colorado Potato Beetles can be bought and released into the garden. Check gardening and seed catalogs for proper species and instructions.

**5) Bioinsecticide BTSD.** BTSD (*Bacillus thuringiensis*, var. san diego) is a type of bacteria. When eaten by the Colorado potato beetle larvae, BTSD produces a poison in the pest’s gut. The larvae will stop eating and eventually die. BTSD is selective, which means it will kill many leaf-eating beetles without hurting beneficial insects like pollinators. It must be eaten by the larvae to work, so spray it on the leaves of plants where they are feeding.

To find BTSD, check gardening and seed catalogs. Make sure to check the BTSD product you select is on the Organic Materials Review Institute’s list of products approved for certified organic farms. Because cutworms spend most of their time hiding underground, the use of other insecticides is not recommended for cutworm control.

**6) Other organically acceptable insecticides.** As a last resort, you might choose to apply least-toxic insecticides that are OMRI approved. Insecticides are usually only effective in slowing down Colorado potato beetles, not stopping them. Organic farmers we asked recommend spinosad, and other types include pyrethrin, Neem oil, or insecticidal soap.

Even though these sprays are approved for certified organic farms, they can be harmful. Be sure to follow instructions on the labels very carefully. These products can kill “good bugs” you want to keep in your garden, so use as little as you can, and spray only in the early morning or late evening when “good bugs” are less active.

Insecticides usually don’t work against adult Colorado potato beetles and their eggs, but they do kill the soft-bodied larvae. To hit the most larvae with a spray, you need to use it soon after the first eggs have hatched, and totally cover the leaves. One round may do the job, or you may find you need to spray again when a new generation of larvae hatch.



**Damage from Colorado potato beetle larva.**

Photo credit: USDA APHIS PPQ Archive, USDA APHIS PPQ



**Adult Colorado potato beetle.**

Photo credit: C. Trouvé, Service de la Protection des Végétaux

## Sources

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*This factsheet was written with the needs of non-commercial home, school and community gardeners in mind. Certified Organic growers, or those seeking a certification, should check with their certifying agency before using ANY insecticide. Some organically acceptable insecticides are approved for use in Certified Organic systems only against certain pests or in certain situations.*