



Who's Eating the Petunias and Roses?

by Anne Skinner, UC Master Gardener

Summer in the Central Valley has many benefits, such as the delicious local fruits and vegetables. Unfortunately, it also brings plant pests to challenge the gardener.



Mature Tobacco Budworm Larva

Budworms such as the tobacco budworm (*Heliothis virescens*) are out chewing on flower buds and blossoms. They are actually not a worm, but the larvae caterpillars of a greenish-brown moth. The moth lays eggs on the flowers, leaves or shoots of the plant. After it hatches from the egg, the caterpillar burrows into the flower bud. It emerges at night and this protects it from birds and beneficial insects. The caterpillar is under 1" long, green, yellow or brown with white or black markings. They can also take on the color of the rose bud they feed upon.

Budworms feed on geraniums, petunias, snapdragons and roses.

Evidence of their arrival are tiny round or oblong 1/16" holes in flower buds, 1/8" holes in leaves and blooms, and black seed-like droppings. Flowers that open after budworm infestation have damaged petals and a budworm can destroy several flowers per day. The plant may cease flower production completely if severely infested. The budworm moves on to consume leaves and foliage also. They peak in late summer. When mature, the larva drops to the ground and pupates in the soil. They can have 2-4 generations in a season, overwinter in the soil, and emerge as a moth again during the next growing season.

Effective control requires starting at the first sign of damage.

A small infestation can be hand picked off the plants at dusk and is the most effective measure. It is advisable to wear gloves, as some caterpillars have irritating spines. Drop the budworms into a container of soapy water to ruin their day. Other management techniques include removal of weeds around the plant, monitoring the plants, removing infested buds, and considering less susceptible plants for your garden. Weeds which serve as a host plant for larvae include black medic, beggarweed, mallow and wild tobacco. Budworms are particularly attracted to yellow blooms and less active in ivy geraniums. If the infested plant is in a container, in the fall, remove the soil from the pot and replot the plant with fresh soil to reduce the overwintering of larvae under the plant.

Bt (*Bacillus thuringiensis*) is a product only harmful to caterpillar insects. It is a bacteria naturally occurring in soil, which produces a toxin in the digestive tract of caterpillars. For optimal control, it must be repeated at 7-10 day intervals and the plant completely covered with spray. Bt must be consumed by the feeding larvae to be effective. If the larvae are inside the flower bud, they are protected from the product.

Neem oil can be effective, but to avoid burning foliage, it should be applied in the evening and not in temperature extremes. Neem oil can damage some plants, so it is best to test a small area and wait 24 hours to note any damage to foliage. Neem oil has a half-life of 3 to 22 days in soil, but only a maximum of 4 days in water. It is nearly non-toxic to birds, fish, bees and wildlife. It works as a systemic in many plants when applied as a soil drench.

Avoid the use of broad spectrum insecticides to reduce the risk to beneficial insects. The loss of beneficial insects often leads to an increase in budworm damage. Many budworms are resistant to insecticides. Synthetic pyrethroids may have some effect, but are toxic to bees.

Predators of caterpillars include birds, spiders, big eye bugs, damsel bugs, minute pirate bugs and parasitic wasps. Planting herbs such as parsley and coriander or flowers such as sweet alyssum provides a habitat for predatory insects. Setting out a feeder or birdhouse near the plants you want to protect will encourage birds to pick up a budworm for a snack.

Tobacco budworms are a nuisance, but with a little work and the help of their natural predators, their damage can be reduced. The beauty colorful flowers add to the garden is worth the effort.



Green budworm on a rose bud
picture by Anne Skinner

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