

Non-Chemical Snail & Slug Control

Pellet bait seems like an easy answer when it comes to combatting snails and slugs. But for those who want to avoid using chemicals in the garden—and most slug and snail baits are quite toxic* to pets, kids and beneficial organisms—there are non-toxic options.

Although there's no organic miracle cure for slug and snail problems, persistent efforts can limit their populations and reduce damage to a reasonable level. Here are "greatest hits" list of control techniques. Combining several of these approaches may help you and your garden stay one step ahead of the molluscan menace.

**Metaldehyde, the pesticide ingredient most commonly used to kill slugs and snails, is highly toxic to pets and children. Some baits combine methiocarb and carbaryl with metaldehyde, which are highly toxic to birds, bees and fish. However, the product "Sluggo" and other brands of iron phosphate-based slug and snail bait have been approved by the Organic Materials Review Institute for use by organic growers, and when properly used are considered safe for use around pets, wildlife, and food plants.*

REDUCE HIDING PLACES

Snails and slugs rest during the day in shady, damp places, then emerge at night to feed. A thorough garden clean up to minimize potential habitat is a first step in cutting down their populations. Debris in contact with the ground, such as boards, bricks, unused flower pots, weeds, and other daytime hiding places should be removed from the garden.

Smooth-surfaced leaves—especially strap-shaped leaves—are also favorite daytime habitat for snails. Consider thinning ivy, irises, agapantha, lilies, ice plant and other succulents and ground covers to increase sunlight and airflow, making the habitat warmer, drier, and less attractive as shelter. Weed the area around tree trunks and keep grass near the garden area trimmed.

Not all hiding places can be eliminated. Low ledges on fences, areas around water meters, the space between the boards and the soil in raised beds, and other likely habitat should all be checked for snails and slugs. When hunting in stands of iris and other plants, be aware that snails react to vibration and will drop into the base of the foliage. Slugs are more difficult to find in the daytime, since they often worm their way into the soil via crevices left by plant roots or earthworms and stay hidden until after dark.

Any snails and slugs you collect should be crushed and buried or composted, or thrown in the trash. If you're squeamish about squashing them, drop your prey into a bucket of soapy water or spray them with a mix of one-half household ammonia and one-half water (keep the spray off of plants). Avoid using salt to kill your catch, since it is toxic to plants.

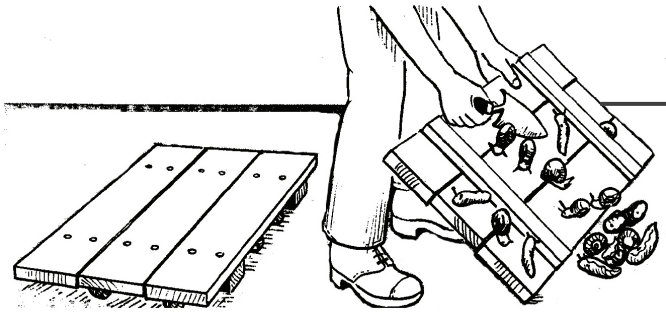
Be on the lookout for snail and slug eggs during your hunts or while gardening. According to UC Berkeley plant pathologist Robert Raabe, "Snails dig holes about an inch deep and deposit their opaque white eggs in them. Check any individual snail on the ground during the daytime. It ... probably is laying eggs. Dig out the eggs and allow them to dry out."

Pest control experts William and Helga Olkowski note, "Young snails remain in the nest for several days, then stay close to the area in which they hatched for a number of months. This is important in management, since a large number of young snails in one area is a clue to where the snails are laying eggs." Slugs lay clear eggs about the size of bb's—look for them attached to boards and other smooth surfaces.

Once you've identified potential hiding places, be consistent about cleaning them out. "Continue to search snail hiding places, daily if possible, until your catch becomes noticeably smaller," writes Pam Peirce in *Golden Gate Gardening*. "Then continue hunts of their favorite hiding places once a week. Don't stop handpicking; keep it as a part of your ongoing control program even if you use other methods as well. It's your most effective weapon." Combine daytime hunts with night-time searches, when slugs and snails come out to feed—but be aware that for every slug you catch, there are likely 20 more still hiding.



Slugs' and snails' large, fleshy "foot," used for locomotion, secretes a mucus or slime trail on which they glide.



Make a trap out of boards raised off the ground by 1-inch runners. Snails and slugs will collect underneath. Scrape off and remove accumulated catch from your garden daily.

CREATE TRAPS AND BARRIERS

After the garden is cleaned up, traps can be used to concentrate slugs and snails in a few spots so that they'll be easy to find and remove. Traps should duplicate desirable habitat, i.e., they should create dark, moist conditions for daytime hiding places. Plastic or unglazed clay flowerpots placed upside down on uneven ground in shady spots, or boards raised slightly off the ground with runners can be used to trap snails. Inverted grapefruit rinds, boards or black plastic laid directly on the ground will lure slugs. Moistening the ground underneath will help draw your prey. Check and empty the traps every day or two; crushed or drowned prey left at the trap will attract more victims.

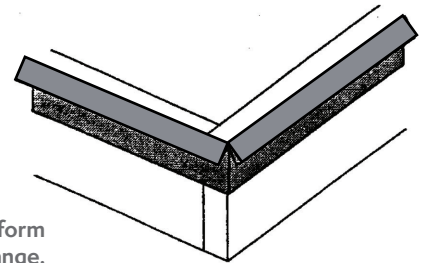
Gardeners report mixed success with beer-baited traps, which are more effective for slugs than snails. Apparently, it's the smell of yeast that attracts the molluscs, so if you don't want to share your six pack, make your own bait: mix 2 tablespoons of flour, 1 teaspoon of sugar and 1/2 teaspoon of baker's yeast in 2 cups of warm water. Set your homemade brew or storebought beer (go for the yeastier brands) in a shallow saucer or lid, with the rim of the container at ground level. Traps can also be made from plastic containers. It may take quite a few traps to make a dent in a large population of slugs.

Barriers of wood ash, diatomaceous earth, or cinder placed around garden beds can all inhibit slug and snail travel. The band of materials should be at least 1 inch high and 3 inches wide. Be aware that ashes and diatomaceous earth don't work once they get wet.

Copper flashing and screen provide a more permanent barrier. A rim of copper flashing bent to form a flange can be nailed to the edge of a wooden raised bed. Apparently the slime that snails and slugs excrete produces a shock when it contacts the copper, prompting the pests to make a u-turn.

Copper screening can also be used to fence off an area. It should be buried in the ground at least four inches deep with two inches protruding above the soil. Note that these barriers will also trap snails and slugs inside the area you want protected, so keep up the handpicking efforts in the beds. If you use copper barriers, make sure to clear away any overhanging plants or other materials that could provide a bridge into the garden.

The Olkowskis have had good luck using sawdust for snail and slug control. "In our own vegetable gardens, we lay a 3-inch to 6-inch layer of fine sawdust on the paths surrounding each growing bed as a deterrent. Then, during our winter rainy season, we cover these paths with boards to walk on . . . Slugs and snails do not like to cross the sawdust when it is dry, and they will not lay eggs beneath the boards. Best of all, we get the sawdust free from local cabinet shops and lumberyards."



Copper strip bent to form a protective flange.

RECOMMENDED READING

- *Common Sense Pest Control: Least-Toxic Solutions for Your Home, Garden, Pets and Community*, by William Olkowski, Sheila Daar and Helga Olkowski. Newtown, CT: Taunton Press, 1991.
- *Golden Gate Gardening: The Complete Guide to Year-Round Food Gardening in the San Francisco Bay Area & Coastal California* (Revised Edition), by Pam Peirce. Seattle: Sasquatch Books, 1998.
- *Pests of the Garden and Small Farm: A Grower's Guide to Using Less Pesticide* (2nd Edition), by Mary Louise Flint. Oakland: UC Division of Agriculture and Natural Resources, Publication #3332, 1998.

This material was produced by the Center for Agroecology and Sustainable Food Systems (CASFS) at the University of California, Santa Cruz. For more information and additional publications, see casfs.ucsc.edu.