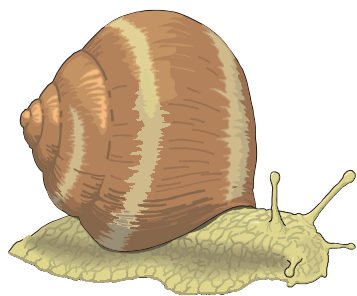




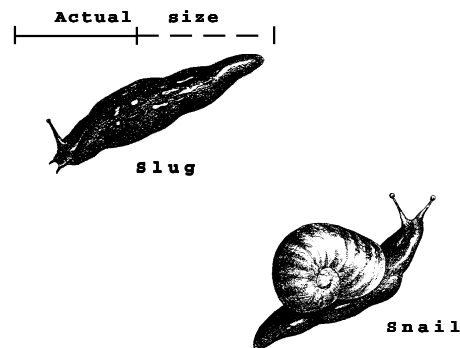
Effective Control of Slugs and Snails



April 1997

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Some gardeners consider slugs and snails to be beneficial because they feed on crop pests such as caterpillars and aphids. When slugs and snails invade vegetable or herb gardens, however, they can cause major damage, consuming up to forty percent of their weight. Slugs and snails attack seedlings, roots, tubers and young plants, leaving large jagged holes and sticky deposits mainly on the leaves of herbs and garden vegetables.



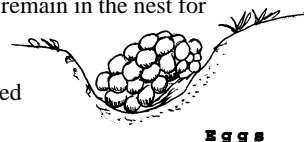
Description

Slugs and snails are terrestrial molluscs belonging to the Phylum mollusca, which also includes oysters, clams and crustaceans. They belong to the class Gastropoda, characterized by the animal's foot being attached to its abdomen. Slugs are distinguished from snails in that they have no outer shell, but only a thin internal scale or a few calcareous granulations. Snails have an external shell large enough to enclose the entire animal, enabling them to survive severe conditions of drought and heat.

Slugs and snails have a soft, unsegmented body measuring 2 to 4 cm in length. The head bears one or two pairs of tentacles. The front tentacles are sensitive to odours and sometimes taste, while each of the larger back tentacles has an eye at the end. The foot, located on the abdomen, is the organ of locomotion. Slugs and snails are hermaphrodites, possessing both male and female organs.

Biology and Life Cycle

With the arrival of spring, soft sounds can be heard coming from slugs and snails under shrubs that are coming out in leaf. The animals crawl out of their winter shelter in search of damp surroundings in which to live. Moisture and the presence of mulch favour the proliferation of slugs and snails. They reproduce by laying a mass of 30 to 120 eggs in the ground or underneath rock debris. After the eggs hatch, the young remain in the nest for several days before emerging and starting to feed like adults.



Eggs

During the day, slugs and snails hide in cool, dark places, under dead leaves, lumps of earth, rocks, mulch and wooden boards. When dusk falls, they emerge from their shelters in search of food. They are also more active under cloudy conditions or after a light rain. Their period of activity extends from about April to October, after which they hibernate until the following spring.

Control of Slugs and Snails

Prevention

To prevent slugs and snails from invading vegetable gardens, it is important to remove all vegetable refuse and other sources of food, as well as bricks, boards and piles of debris that are directly in contact with the soil. It is also a good idea to remove fallen leaves and to thin plants, so that the sun can penetrate more easily.

Physical Control

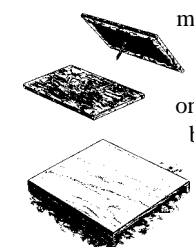
Hand picking

Hand picking is most effective in the evening, about two hours after sunset, since slugs and snails are more active at night. Using a flashlight, check the base of plants, the back of leaves and between the rows in the herb or vegetable garden. Use a spoon to dislodge the pests, and then place them in a container of soapy water or rubbing alcohol to kill them.

Trapping

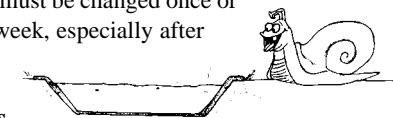
You may trap slugs and snails by creating an ideal shelter for them in a cool dark location. Place melon or grapefruit peel or inverted flower pots in the garden, leaving space so that the pests can enter the shelter. Wooden boards or asphalt shingles covered with aluminum foil

may also be used as traps. Simply place them along the plant rows with the foil side on the top. Nail the middle of the boards or shingles to the ground so that they are secure. During the day, slugs and snails will take shelter underneath to get away from the sun. Check the traps daily to pick up the slugs and snails and then kill them by placing them in a solution of soapy water or rubbing alcohol.



Baits

An aluminum plate or any other shallow container partially filled with beer and buried to the rim will attract slugs and snails and also act as a trap. Slugs and snails that come to drink will fall into the beer and drown. Instead of beer, you may use a homemade solution containing one tablespoon of yeast dissolved in 100 mL of water. For this method to be effective, the solution must be changed once or twice a week, especially after a rain.



Barriers

Another effective way of getting rid of slugs and snails is to install barriers. Sprinkle a sufficient quantity of sand, wood ashes or baked eggshells at the base of the plants. These substances irritate the bodies of slugs and snails and deter them from climbing onto the plants to feed.

Copper flashings about 5 cm high may also be installed around the borders of the garden. The copper emits a small electric charge that keeps the slugs and snails away.

Strips of aluminum mosquito screening about 7.5 cm high can also be placed around the garden. Insert long strips of screening about

2.5 cm deep in the ground. Create a barrier by removing the top two horizontal wires of the strip over the entire length and folding back the vertical wires.

Diatomaceous Earth

Diatomaceous earth, a fine powder also known as silicon dioxide, consists of microorganisms found in the sea. Apply by lightly coating or dusting areas where pests are found or hide such as in garden rows or under the leaves. As the slugs or snails crawl over the fine powder, their outer protection is scratched, causing them to dehydrate and die. Diatomaceous earth is nontoxic to humans and pets and will remain active as long as it is kept dry.

Chemical Control

CAUTION:

Chemicals should not be used on the foliage and edible parts of garden vegetables.

Care must be taken to ensure that bait formulations are inaccessible to domestic animals since they could cause poisoning.



Slugs and snails are particularly fond of products containing metaldehyde or methiocarb, the most common means of chemical control. These products are sold in all good gardening centres in the form of tapes, pellets or aerosols. To maximize the effectiveness of these products, they should be used in wet weather in the late afternoon or evening when slugs and snails are most active. Since only moist baits attract the pests, the soil should be damp when these products are used.

Tapes

Apply anti-slug tapes on the surface or in the ground in strips around each plant. The tape may be held in place with stones or earth. When the slugs and snails chew the tape, they are poisoned by the chemical in the tape. From the holes they make in the tape, it is possible to pinpoint the areas that are most infested and to use additional tape to eliminate the pests.

Pellets

When you discover damage caused by slugs or snails, sprinkle the garden soil, rows and borders with the product, or place it in small piles one metre apart. The product will attract the slugs and snails which will then be destroyed by contact or ingestion.

Remember that birds, dogs and cats are also attracted to these baits and can be poisoned by them. The baits should be covered with boards or rocks or placed in containers, which act as a natural hiding place for slugs and snails. Some of these products contain a chemical called Bitrex, which is not considered toxic but has a very bitter taste that is meant to prevent accidental ingestion of the product by birds and animals.

Aerosols

Some metaldehyde and methiocarb-based products are also sold as aerosols. These products may be mist sprayed on the soil, in garden rows and at the base of vegetable plants at distances of 10 to 15 cm. Slugs and snails will be destroyed on their nightly excursions when they come in contact with the treated surfaces.



Remember

Before Purchasing a Pesticide Product

- Identify the pest correctly.
- Use physical control methods and alternatives to pesticides.
- Read the label directions and safety precautions before buying the product. The label must include the name of the pest to be controlled and the treatment location (e.g., indoor, outdoor, garden uses, pet treatment).
- Purchase only the quantity of product needed for the treatment.
- Alternatively, you may choose to hire a licensed pest control operator.

When Using a Pesticide

- Carefully read all label instructions and precautions before using pesticides.
- Do not drink, eat or smoke while applying pesticides.
- Persons and pets should vacate the area during treatment. Cover or remove aquaria.
- If kitchen area is to be treated, cover or remove food, dishes and utensils.

After Handling a Pesticide

- Always wash your hands thoroughly after handling any pesticide product.
- Do not permit persons or pets to contact treated surfaces until residue has dried completely.
- Provide adequate ventilation of treated areas after use.
- Wipe clean all surfaces that comes in direct contact with food, such as counters, tables and stovetops, including indoor and outdoor surfaces.
- Always store pesticides out of reach of children and pets and away from food and beverages.

In Case of Accidental Poisoning

- Call a poison control centre immediately and seek medical attention.
- Take the pesticide container or label with you to the emergency facility or physician.
- Follow first aid statements on the label.
- In case of accidental poisoning of pets seek veterinary attention immediately.



When Disposing of Pesticides

Do not reuse empty pesticide containers. Wrap and dispose of in household garbage.

Unused or partially used pesticide products should be disposed of at provincially or municipally designated household hazardous waste disposal sites.

Use Common Sense

- These are general recommendations.
- Consult the label for specific instructions.
- When in doubt, contact a professional.

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