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Slugs: characteristics and control

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Quick Facts

Slugs can be one of the most damaging pests of vegetable and flower gardens in Colorado.

Slugs thrive under conditions of high moisture. The most effective means of reducing slug problems is to reduce humidity in a garden.

Metaldehyde baits can help control slugs if they are applied correctly and at the proper time.

Slugs can be attracted to fermenting materials, such as beer, and trapped.

Slugs are one of the most destructive and difficult pests to control in Colorado gardens. Seedlings of many vegetables and flowers are favored foods, and high populations of slugs can cause difficulties in establishing a crop. Slugs also feed on many fruits and vegetables prior to harvest. This preharvest feeding results in feeding wounds that allow various rotting fungi and bacteria to enter and spoil the crop. In addition, the slime trails produced by slugs can contaminate garden produce.

Injury by slugs is sometimes difficult to diagnose since slugs hide during the day. Smaller leaves may be eaten entirely while only the edges of larger leaves may be consumed. Thick leaves often are rasped from the leaf underside. The presence of the slime trails often is the best indication of slug activity.

History and Habits

Slugs, and closely related snails, are classified as **gastropods.** They are more similar to clams and mussels than other common garden pests such as insects.

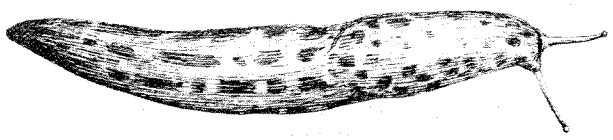

Figure 1: Spotted garden slug

Slugs feed on a variety of plant materials that they eat by rasping with specialized mouthparts. Most feeding is done during the night, although they occasionally are active during cool overcast and rainy days. Slugs seek shelter during the day in soil cracks and under debris. During hot and dry weather, slugs may be temporarily inactive.

Slugs lay small masses of eggs in soil cracks. The young slugs that hatch from these eggs travel through the soil and damage germinating seeds and root crops. Under favorable conditions, slugs complete development in a few months. The most common species in Colorado often have two generations per year; one in the spring, another in fall.

Cultural Controls

Slugs are mostly water and produce large amounts of protective mucous. Consequently, slugs are susceptible to drying and the presence of a slug population depends on the moisture conditions in a garden. Any practices that decrease moisture in a

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garden will reduce slug problems, although effects may not be seen immediately.

To eliminate potential shelter for slugs remove surface debris in and around the garden and avoid organic mulches (straw, grass clippings). Also, increase air movement around plants and reduce high moisture conditions with trellises and wider plant spacing.

Drip irrigation, soaker lines, or other irrigation techniques use limited amounts of water and decrease the humidity around plants. Overhead irrigation should be done early in the day to allow more time for leaves and soil surfaces to dry before the nightly activity of slugs.

Attractants and Traps

Slugs are attracted to chemicals produced by many fermenting materials. These materials can be used to make **attractant traps**. For example, pans of beer or sugar-water and yeast mixtures can attract, trap and drown slugs effectively. A single baiting with these materials can remain effective for several days, as long as sufficient liquid remains. However, since the attractive range of such traps is less than a few feet, these traps must be placed throughout the planting to reduce the slug population significantly. (Note: Alcohol is not an attractant to slugs.)

Selective use of trap boards or moistened newspaper placed on the soil surface also can be used to concentrate slugs that seek shelter. These shelters should be checked every morning and the slugs killed. When not regularly maintained, traps should be removed.

Trap crops also may be considered. Certain plants seem to be favored by slugs, such as lettuce, calendula and beans. These highly attractive plants may be planted to divert slug feeding on the main crops. For further control of slugs, go out early every morning and remove the slugs from the trap crops or treat the trap crops to kill the slugs.

Repellents and Barriers

Slugs often avoid travelling over materials that are high in acid, alkaline or are abrasive. Diatomaceous earth, wood ashes and similar materials placed around plants provide some protection. However, the effect of these treatments is reduced by exposure to moisture.

Salt also is toxic to slugs and direct applications of table salt to a slug can kill it. This technique has limited usefulness since excessive salt in a garden can affect plants.

Certain metal ions also are highly repellent to slugs. Barriers of copper foil exclude slugs from greenhouse benches and raised bed plantings. Other copper-based materials, such as copper sulfate, repel slugs.

Molluscicides

Pesticides effective against slugs and snails are known as molluscicides. These often are different chemicals than those used to control insects and other garden pests. Slugs are not susceptible to poisoning by most insecticides.

Metaldehyde. This is the most commonly used molluscicide. It is usually sold in the form of slug baits. Liquid formulations (Deadline, Slug-it, etc.) also have become popular. Metaldehyde can be used around vegetable and fruit crops as well as in flower gardens or among non-food crops.

Metaldehyde is attractive and poisonous to slugs. After feeding on metaldehyde, the slugs become immobilized and start to produce large amounts of mucous. Death results from excessive loss of water.

Successful use of metaldehyde baits requires care in application and favorable weather conditions. Slugs often can recover from metaldehyde poisoning if high moisture conditions are present. Also, control is poor during cool periods since the slugs are relatively inactive. It is best to apply metaldehyde when the evening is warm and moist and the forecast for the following day is hot and dry. Young slugs are more susceptible than older slugs.

The range of metaldehyde attraction is limited so it should be spread throughout the infested area. About 10 or more pieces of bait (flakes, pellets, liquid drops) should be placed per square yard. The amount needed for effective control varies depending on the attractiveness of other food in the area. Metaldehyde is inactivated by sunlight so it should be spread underneath leaves.

Although metaldehyde is considered relatively non-toxic to humans, poisoning of pets has occurred. The most common symptom of metaldehyde poisoning is temporary stupefication; the animal may appear drunk. It is important to apply metaldehyde in a manner that reduces the chance of accidental pet poisoning.

Mesurol. Some slug baits also may contain materials other than metaldehyde. Mesurol (mexacarbamate) is a chemical found in many slug baits and is more effective against slugs than metaldehyde. Mesurol is less affected by high humidity conditions or cool temperatures. However, mesurol also is more toxic to mammals and its use is prohibited near food crops. Mesurol baits can be used in flower gardens and around the edges of vegetable or fruit crop plantings.

Carbaryl. Among the insecticides used in garden protection, carbaryl (Sevin, etc.) is one that can help control many species of slugs and snails. Unfortunately, the most common species of slug in Colorado is insensitive to carbaryl. Carbaryl is registered for use on many garden plants and sold in a variety of forms including baits, powders and liquids.