

**Control of Slugs in Strawberries**  
**By Mark Bolda**  
**Farm Advisor for Santa Cruz, Monterey and San Benito Counties**

Slugs, which are mollusks, are well known in production strawberry fields and home gardens. The two types of slugs commonly encountered on the Central Coast are the garden slug, *Arion hortensis*, and the little grey slug, *Deroceras reticulatum*. Both slugs have no shell, are slimy and have bodies which are flexible in shape. They can be found on the plant at night and in the early morning, and under the plastic or other mulch during the day. Slugs are sensitive to dryness, and will seek out moisture, making the humid environment under the mulch of strawberries attractive to them.

The garden slug is the larger of the two commonly found slugs, measuring 3 to 4 cm in length and being a grey to dark brown in color. Living for about one year, the garden slug is sexually mature in about three weeks. They are sensitive to cold, and not many will survive a cold winter.

The little grey slug is smaller, measuring 1-2 cm in length, and has a mottled grey color. It takes from three to four months for the little grey slug to reach maturity. It is less sensitive to cold, and is consequently more able to survive Central Coast winters in high numbers.

Damage of slugs is variable but noticeable. Feeding on fruit produces rough holes, rendering the fruit unmarketable in any venue. Slugs also feed on the leaves of strawberries, and the effects of the rasping feeding are ragged holes in the leaves.

There are several ways to address slug problems in home gardens. The use of copper barriers around planted areas has been recommended, since slugs will not cross the copper. The copper can either be tacked onto the wood of a raised bed, or may be used in the form of a six inch high and three inch deep buried copper screen.

Clearly, the construction of barriers will not work on a commercial scale. The elimination of hiding places such as rocks, weeds, logs and boards will assist in reducing the numbers of slugs, because of the removal of habitat. Furthermore, growers can seek to plant away from areas with lots of debris, such as leaves and ground covers. Orchards can be real havens for slugs for just this reason.

Two of the materials registered for use in strawberries for the control of slugs are Deadline (Metaldehyde) and Sluggo (Iron phosphate). Both are registered for use in conventional, non-organic strawberries only.

Deadline, while reported to be quite effective in controlling slugs in strawberries, has a number of restrictions which can limit its use in strawberries. One must wait 12 hours before entering the field, and one needs to take care to not have the material come in contact with the fruit.

Sluggo has not been used extensively yet in strawberries. Made from iron phosphate and a wheat derivative which serves as bait, Sluggo is non-toxic to humans and other mammals, and has no re-entry, preharvest or application restrictions.

In order to further understand the efficacy of these two materials, it can be useful to field test them, and evaluate their effects on slug populations.

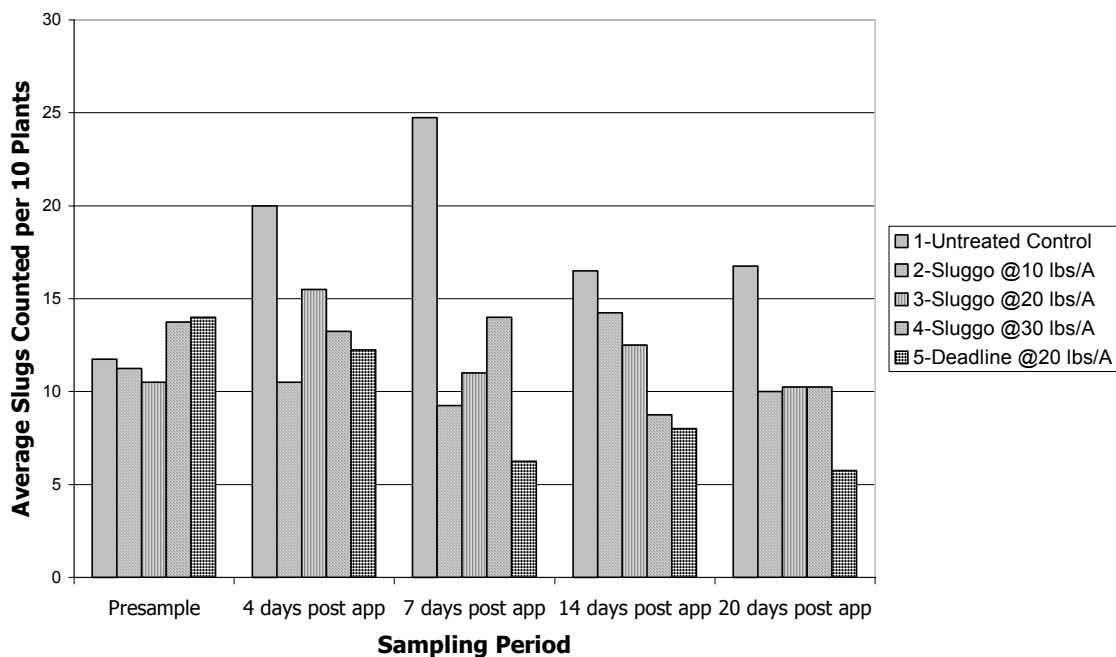
A trial consisting of an untreated control, one standard rate treatment of 20 lbs per acre Deadline Bullets, and three rate treatments of Sluggo (10 lbs, 20 lbs and 30 lbs per acre) was run earlier this year.

Each treatment was composed of 4 replicate plots of 25 feet long by 4 feet wide. The trial was run in a field of second year Diamante strawberries at the Coastal Berry Salas Ranch in an area reporting slug problems. The two species of slug found on this ranch were the garden slug, *Arion hortensis*, and the little grey slug, *Deroceras reticulatum*. Application was made on April 24, 2003. Amount of material per replicate plot was weighed out and applied by hand, as per grower practice.

Prior to application, a precount of slugs was made in order to determine overall population. Later counts were done 7 days, 14 days and 20 days after application. Counting was done by lifting plastic tarp around 10 plants in each replicate plot and quantifying the number of slugs visible underneath. Slugs determined to be dead were not counted.

The chart below outlines the results by date of evaluation.

### Efficacy of Sluggo Molluscicide



The mean total number of slugs per replicate plot per evaluation were summed together and tested statistically as a way of determining which material was most effective in controlling slugs over the course of the evaluation. The table below outlines the results:

Treatment	Mean	Homogenous Groups
Deadline @ 20 lbs/Acre	46.25	A
Sluggo @ 10 lbs/Acre	55.25	A
Sluggo @ 20 lbs/Acre	59.25	A
Sluggo @ 30 lbs/Acre	60.0	A
Untreated Control	89.75	B

The results show that although Deadline used at 20 lbs per acre was most effective in reducing numbers of slugs, the differences are not great enough to say with 100% (or greater than 95%) certainty that it was more effective than any rate of Sluggo, nor were any of the Sluggo treatments different in effect from one another in a statistical sense. This is indicated by the same letter “A” under the “Homogenous Groups” heading. However, all tested materials had statistically better control of the slugs than the untreated control, as indicated by the letter “B” in the same column.

**The Bottom Line:** Sluggo and Deadline molluscicides were effective in controlling garden and little grey slugs in second year strawberries. Although total numbers of slugs at the end of the evaluation period were not statistically different between any of the Sluggo rate treatments or Deadline, Deadline did consistently outperform Sluggo on numerical basis by date.

The author would like to acknowledge the gracious assistance of Coastal Berry and Western Farm Services with this trial.

The above has been a brief description and evaluation of options available to strawberry growers of all stripes for the control of slugs. It is hoped that the information given will be of some use for growers when considering measures which can be taken to mitigate slug problems.