

To

Date

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3 pages from Sonja Peters

SNAIL AND SLUG WORKSHOP – PORTLAND 2009



The Sixth International IPM Symposium, "Transcending Boundaries," will be held March 24–26, 2009 at the Oregon Convention Center, Portland, Oregon.

This 1-day workshop was held at the end of the “6th International IPM Symposium” held in Portland (Oregon) in March 2009. The workshop on snails and slugs was an invitation to scientists and practitioners from around the USA to share new ideas and developments on management of this difficult pest. It was attended by about 50 persons. There was a strong focus on invasive slug species.

General Comments

- This group of experts had nothing new to say about the management of slugs and snails.
 - There is a need for smaller bait that is lighter for small-size slugs and snails.
 - All plants coming into the nursery should be inspected before they are placed in growing areas.
- This comment was made to prevent invasive species from coming into the nursery.

Background

Snails and slugs (native and invasive) are severe pests in agriculture and horticulture around the world. Invasive slug and snail species are becoming a problem.

In the last 5 years, there have been over 10,000 interceptions of exotic snails and slugs at US ports of entry. Entire shipments of plants in the US have been destroyed due to snails and US nurseries quarantined when a single brown garden snail is found, for example.

Snails and slugs are a concern because they chew irregular holes with smooth edges in leaves and flowers. In addition, some exotic species are poisonous to humans.

About Slugs and Snails

Some slugs can move 1.2 meters in one night. They feed on green plants, algae, fungi, lichens, animal feces, dead and dying flesh, insects, worms, and other slugs and snails. They can consume several times their own body weight in one day.

Snails and slugs are most active at night and on cloudy days. In the summer only 5% of slugs remain above ground; the others bury themselves in the soil. They overwinter in the soil or media.

Many species can store sperm and produce fertile eggs for several weeks after mating. They lay eggs in the autumn upon the onset of fall rains.

TREATMENTS: NON CHEMICAL

a) Sanitation

Remove plant debris from the area. Remove any hiding places such as, flats, pots or boards.

b) Bait Traps

A bait trap is a container that has an attractant to the snails and slugs in it. However, at the meeting a person from Monrovia Nursery stated that bait traps do not work, because every pot with a plant also attracts them.

c) Barriers

Use 2x4 wood with copper on it as a barrier and place it around the nursery. Apply bait in a band on both sides of the 2x4. For example, for Sluggo the band should be 15 cm wide.

d) Biological Control

Nematode: *Phasmarhabditis hermaphrodita*

Not registered in Canada or the US. Sold by Becker Underwood in Europe as Nemaslug. This nematode has been found to infect and kill a wide variety of pest species of slugs and snails.

Others: small animals, reptiles, amphibians, birds, predatory and parasitic insects, other slugs.

TREATMENTS: CHEMICAL (BAITS)

a) Metaldehyde

Metaldehyde is registered in Canada and sold as Deadline M-Ps etc. It is ingested or absorbed by contact. It paralyzes the slugs, causing them to excrete excessive amounts of mucus causing death from dehydration and/or exposure to sunlight. Death occurs in 1-3 days. In some cases the slug can recover if weather becomes cool/wet.

Apply every 3-4 weeks. No more than 6 applications per year. Apply in the evening for best results. It is more effective in wet conditions than other products. Metaldehyde does break down in the sunlight and under moist conditions. Toxicity is enhanced in higher temperatures (20°C).

It is very dangerous to humans, children and animals.

Metaldehyde is a feeding depressant if the concentration of the active ingredient is:

- 1) too low, and therefore, sublethal or
- 2) too high, deterring the gastropod from eating and therefore, also sublethal.

b) Ferric Sodium EDTA

Ferric sodium EDTA is registered in Canada and sold as Safer's Slug and Snail Bait. Mode of action is not known. There is a low risk to humans and animals.

c) Ferric Phosphate

Ferric Phosphate is registered in Canada and sold as Sluggo Slug and Snail Bait etc. After eating the bait slugs and snails stop feeding. Affected slugs and snails die within 3 to 6 days.

Apply the bait if it has been consumed or every 2 weeks if slugs and snails continue to be a problem. Apply in the evening, as slugs feed at night or early morning. Soil should be wet, but no standing water. Product efficacy is higher when temperatures decrease and relative humidity increases. Do not apply directly to plant parts. Product should be evenly scattered at a rate of 5 grams / m².

Safe for pets and wildlife. Product does grow mold soon after application.

d) Boric acid (NiBan)

Boric acid is not registered in Canada to control slugs and snails. It is registered in Canada for Domestic use for control of cockroaches and ants.

It acts as a stomach poison affecting the insect's metabolism and is known to kill cockroaches, fleas, ants and silverfish. NiBan (orthoboric acid 5%) is sold in the US by Nisus Corporation. The US label includes controlling snails and slugs.

The manufacturer reports that NiBan is safe for children and pets and that it will not degrade in sunlight or in heat and that it will stay active in up to 4 inches of rain. It will also not mold. Mortality is 30 to 70% at 7 to 28 days after application.

Once the insect ingests boric acid it is unable to extract nutrition from its food and it then starves to death. It can take several days until the insect dies.

e) Sulfur-based products

Copper sulfate: only effective against grey slugs.

Iron sulfate: more environmentally-friendly.

Aluminum sulfate: not to be used for slug control, only effective against field slugs.

f) Iron-Phosphate

Iron-Phosphate is registered in USA and in European countries. Ingestion leads to feeding inhibition, and then death. The slug stops producing mucus and dies. Available in pellets.

g) Methiocarb

Methiocarb is not registered for use in Canada. It must be ingested and is a neurotoxin that immobilizes the pest. It is more effective in wet conditions and less effective in hot, dry conditions.

h) Metaldehyde + Methiocarb

Mixes are used to overcome the disadvantages of individual compounds.

i) Table of slug-snail baits registered in Canada

NAME	A.I.	LABEL	RATE	SIZE	COST	\$/M ²
Deadline M-Ps	metaldehyde	slugs and snails	2 grams / m ²	4.54 kg	\$22.90	\$0.01 / m ²
Safer's Slug and Snail Bait	ferric phosphate	slugs and snails	5 grams / m ²	1 kg	\$9.44	\$0.05 / m ²
Sluggo Slug and Snail Bait	ferric phosphate	slugs and snails	2.5 to 5 g / m ²	20 kg	--	--
Safer's Slug and Snail Bait II	ferric sodium EDTA	slugs and snails	2 grams / m ²	10 kg	--	--

Note: Resistance of slugs against molluscicides has not been observed. It is considered unlikely.