Commercial Greenhouse/Nursery Industry in Oregon

- Value = $745 million (2012 NASS data)
- 1800 operations, 20,000 workers
- Top 4 counties – gross sales: Marion, Washington, Clackamas, and Yamhill
- 54,000 acres in production
- About 75% is shipped out of state

NASS 2010 Greenhouse and Nursery Survey

- **Slug and snail pest management education for nurseries and greenhouses**

Industry articles, workshops

Growing Knowledge

OSU Oregon State University

Slime and punishment

Voracious slugs and snails are no match for an integrated battle plan

No matter how small, gastropods such as this amber snail (*Oxyloma* sp.), shown crawling next to a dime, can cause huge headaches for growers. There are many ways these pests can be managed and eliminated.

By Robin Rosetta

Few creatures are held with such revile by horticulturists as those pests who destroy our plants, profits and peace of mind. Add slime, and even gentle souls grab weapons of mass destruction.

When living in harmony with snails and slugs is no longer an option, plant protectors have several tactics at their disposal to dispense with these phytophagous adversaries.

Snails and slugs are mollusks, and are loosely related to octopi and oysters. Their particular taxonomic class is called gastropoda (from the Latin roots *gastro*, meaning stomach, and *poda*, meaning foot). Depending on the species, these animals are well adapted to devouring a range of foodstuffs, including living and dead plants, fungi, small dead animals, and sometimes, live prey.

Slugs and snails are really the same animals. Slug evolution diminished their shell to a legacy of a shell hidden underneath their hump-like mantle. This adaptation enabled slugs to move through tight spaces and down into the soil, where they find both refuge and food.

Snails are hampered from such movement, but instead use their shells to their benefit, allowing them to escape enemies and inclement conditions within the safe harbor of their domicile.

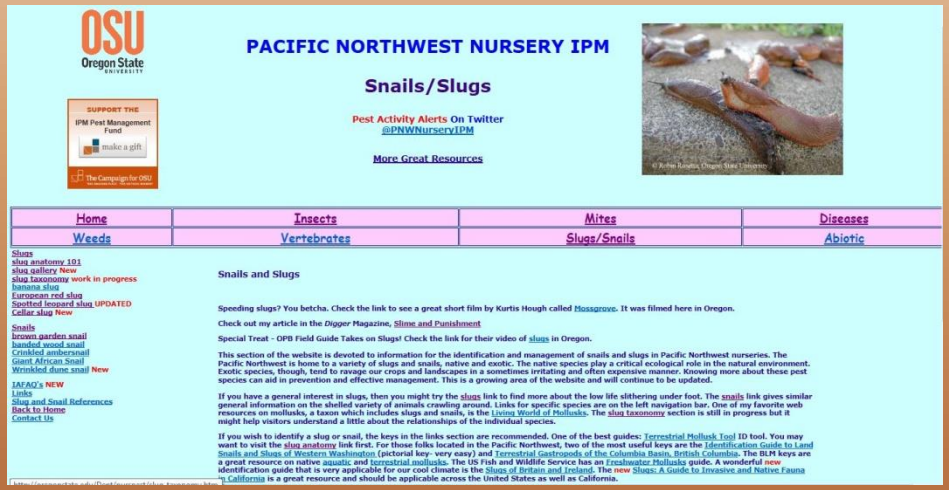
Snails and slugs can be both direct pests and shipping contaminants in plant production. Many snail species, once detected, can trigger quarantines in nurseries. A common species inducing this reaction is brown garden snail, *Cornu aspersum*, originally a European species, now established in many areas of North America.

50 ▶

An ongoing series provided by Oregon State University in partnership with OAN

APRIL 2011 ▲ GROWER 49

Slug and snail web resources



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The Campaign for OSU

PACIFIC NORTHWEST NURSERY IPM

Snails/Slugs

Pest Activity Alerts On Twitter @PNWNurseryIPM

More Great Resources

Home	Insects	Mites	Diseases
Weeds	Vertebrates	Slugs/Snails	Abiotic

Slugs
slug anatomy 101
slug gallery New
slug taxonomy work in progress
banana slug
European red slug
Spotted leopard slug UPDATED
Cellar slug New

Snails
brown garden snail
banded wood snail
Crinkled ambersnail
Giant African Snail
Wrinkled dune snail New

IAFAQ's NEW
Links
Slug and Snail References
Back to Home
Contact Us

Snails and Slugs

Speeding slugs? You betcha. Check the link to see a great short film by Kurtis Hough called Mossgrove. It was filmed here in Oregon.

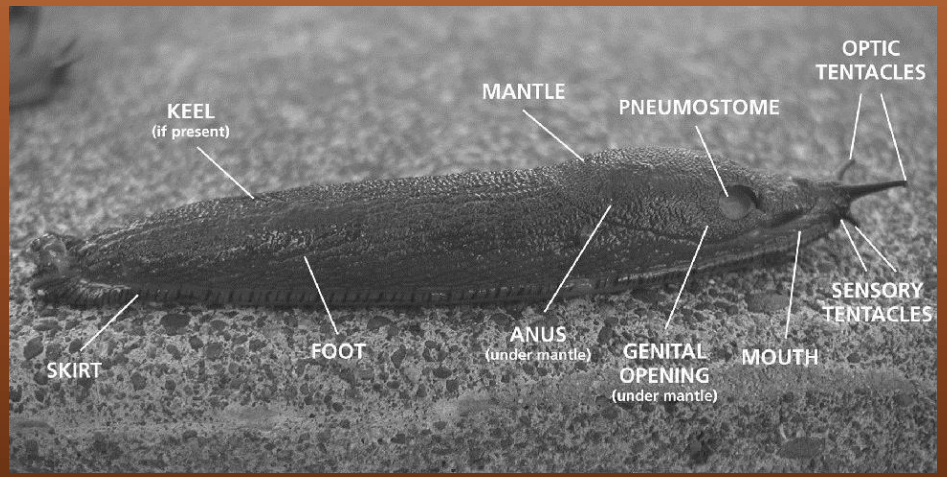
Check out my article in the *Digger* Magazine, Slime and Punishment

Special Treat - OPB Field Guide Takes on Slugs! Check the link for their video of slugs in Oregon.

This section of the website is devoted to information for the identification and management of snails and slugs in Pacific Northwest nurseries. The Pacific Northwest is home to a variety of slugs and snails, native and exotic. The native species play a critical ecological role in the natural environment. Exotic species, though, tend to ravage our crops and landscapes in a sometimes irritating and often expensive manner. Knowing more about these pest species can aid in prevention and effective management. This is a growing area of the website and will continue to be updated.

If you have a general interest in slugs, then you might try the slugs link to find more about the low life slithering under foot. The snails link gives similar general information on the shelled variety of animals crawling around. Links for specific species are on the left navigation bar. One of my favorite web resources on mollusks, a taxon which includes slugs and snails, is the Living World of Mollusks. The slug taxonomy section is still in progress but it might help visitors understand a little about the relationships of the individual species.

If you wish to identify a slug or snail, the keys in the links section are recommended. One of the best guides: Terrestrial Mollusk Tool ID tool. You may want to visit the slug anatomy link first. For those folks located in the Pacific Northwest, two of the most useful keys are the Identification Guide to Land Snails and Slugs of Western Washington (pictorial key- very easy) and Terrestrial Gastropods of the Columbia Basin, British Columbia. The BLM keys are a great resource on native aquatic and terrestrial mollusks. The US Fish and Wildlife Service has an Freshwater Mollusks guide. A wonderful new identification guide that is very applicable for our cool climate is the Slugs of Britain and Ireland. The new Slugs: A Guide to Invasive and Native Fauna of California is a great resource and should be applicable across the United States as well as California.



Snail/slug impacts on OR Nurseries

- **Invasive Slug and Snail Species Awareness**

Western Region Slug & Snail IPM Workgroup
Slugs and Snails in Ornamental Systems Meeting

- 37 researchers, growers, regulatory agency representatives, and industry professionals from the western U.S. and Hawaii met on March 26, 2009 in Portland, Oregon
- impacts
- research priorities
- coordination of research and outreach
- future plans for managing snails and slugs in ornamentals

Snail/slug impacts on OR Nurseries

- **Slug Damage**

Management costs

- No data on nursery/greenhouse losses
- Limited use or sales data for nurseries
- One industry estimate: 15,000 lbs of metaldehyde product is sold to Oregon nurseries.

  Cost is approximately $2.00/lb. Rate = 1 lb/2200-4400 ft^2

- Additionally growers use iron phosphate, $2.50 per lb,

  rate = .5-1lb/1000 ft^2
- Ferric iron ($2.35/lb),

  rate is .25/LB to 1/LB per 1000 ft^2.
- Methiocarb is one of the only products that works well during cool wet weather.
- Methiocarb ($102/lb);

  rate = 1 lb/100 gallons, approximately $102/acre
- Methiocarb has a Category 1 – Danger label and a 24 hour re-entry interval, potentially delaying shipments.

Snail/slug impacts on OR Nurseries

- **Brown Garden Snail Quarantine**

Snail/slug impacts on OR Nurseries

- Canadian officials have rejected nursery stock due to presence of European Brown Garden Snail. Infrequent. The shipment is usually returned to Oregon at expense to the shipper.
- There are European Brown Garden Snail quarantines in 5 Southeastern states. Require the ODA to inspect shipments to confirm there are no snails present. Delays in shipping until inspectors can inspect the stock and issue certificates.
- If European brown garden snails are found nurseries are required by the ODA to eliminate the infestation. Costly for the infested nurseries. Some nurseries in areas where EBGS in endemic are constantly treating to exclude snails from the nursery grounds.

Snail/slug impacts on OR Nurseries

- **Amber Snail Contamination of Plant Shipments**

- Amber snails are a contaminant pest in nursery plant shipments which may lead to shipment delays, rejections, or crop destruction.

Snail/slug impacts on OR Nurseries

- Several times/year nursery stock going into California is held at CDFA border inspection stations pending identification of snails.
- Most are identified as amber snails and allowed to proceed to the destination in California. The delays do cost the shipper money
- Growers often have to credit customers receiving infested shipments.

- **Amber Snail Management Research Program**

- Evaluation of conventional and novel pesticides to manage amber snails, a contaminant pest, in nursery plant shipments

Conventional and novel molluscicides