VEGETABLE GARDEN ORGANIC PEST MANAGEMENT

- Your garden design will be a major factor in the types of pests you have as well as their management.
- Is your garden set up to fight nature or partner with nature? You do not own Nature!
- Plant for both you and your garden partners.
- Healthy gardens have great diversity (of everything).

- Just because you have them does not mean you have a problem.
- When to Act: Few on a Few, Few on Many, Many on Few, Many on Many
- Persistence

- Learn to live with some pest damage.
- Need to follow through.

- I will not be sharing "Home Remedies" methods, I do not support them as they are rarely organic or safe for either you and/or your garden.
- One of your biggest 'pests' to deal with and one of the hardest to manage/control is ants.
- Recognize we are still on a learning curve conserving our gardens and we are learning that "This is the way we always have done it" may not be the best way to do it. (mulch).

ANTS:

Ants help control numerous insect populations. They have been called "the foremost predators" and are superb scavengers. Because many ants build their nests in soil, they play an important part in keeping outdoor soil healthy. Ants, along with termites, "turn more of the soil than earthworms.

- If you see ants crawling up aphid-infested trees or woody plants, you have a problem.
- Branches can provide pathways to fences, buildings, and other trees that will help them reach honeydew producers. Prune/remove these bridges.
- Ants can, and will, find a path over most objects to their food source.
- Understand that any successful management/control will only be temporary.
- People will usually only spray the visible ants in hopes of stopping the invaders. Unfortunately, applying that spray wastes time, money, and effort.
- You will not eradicate ants. A more realistic strategy is to minimize the damage.
- Some ants sting so this may be a concern and influence how you deal with them.
- Colonies regularly send out ant scouts to look for food sources. These individual scout ants are the ones you need to kill so they do not return to their nest and inform the colony of a new food source.
- There are numerous ways to reduce and/or kill the colony.

    - You can pour boiling water into the colony.
    - Use a commercially formulated ant bait. The ants feed on the bait, then carry some back to the nest to feed the Queen and the ant larvae.
    - Manage honeydew-producing insects on landscape plants.
- Placing a 'better' source of food away from your garden such as cheese, meat, or something tasty is not a helpful solution. Increasing the size of the ant colony, which will create a bigger food bill for the many new ants, is not going to help your garden.
- Sticky barriers are a useful deterrent against ant attacks.
- If you use commercially formulated ant baits, you need to refresh the bait as needed until the foragers stop coming. Commercial baits are formulated such that the foragers will survive long enough after feeding that they have sufficient time to carry bait home to colony members. The main drawback to using most commercial baits is they may not be formulated for outdoor use.
- Once they have had their fill, remove all the bait; you do not want to attract a neighboring colony.
- Diatomaceous earth is a fine powder that kills ants by dehydrating them. Since it is so absorbent, however, it is only effective in dry environments.
- Some ant species are attracted to the sweet honeydew deposited on plants by aphids and scales. Reduce the numbers of these insects on trees and shrubs near your house. Consider removing plants that host these insects.
- Trim branches of trees and shrubs that touch your home to keep ants from crawling across to the roof or siding. Provide a dry, vegetation-free border, such as brick walkways or stones, around the house foundation to discourage nest building. Avoid stacking wood or trash next to structures. Regularly inspect compost and firewood piles, plant containers, and woody debris for ants.
- Keep your pet's eating area clean. If you need to leave dry pet food out, place the food bowl in a slightly wider shallow pan of soapy water. Keep kitchen and bathroom areas dry. Wipe counters, eliminate standing water, and fix leaky faucets.
- Ants sometimes nest in potted plants.

APHIDS:

- Once sooty mold accumulates on a plant, there is no effective treatment for removing it other than the natural weathering and leaf replacement that occurs with the passage of time. The key to avoiding sooty mold is to control the insects that produce the honeydew on which it grows.
- Spray plants with a strong stream of water to knock the Aphids off your plants.
- Plant "trap crops" like calendula, nasturtiums, and dill. Aphids like to eat these plants even more than your vegetables, so you can attract aphids away from your other plants!
- Try planting Pollen & Nectar Producing Plants to attract good bugs.
- Gardeners should inspect the backside of plant leaves, particularly tender new leaves, for aphids each week. If you find aphids in your garden, keep a look out for "aphid mummies." These are the bodies of aphids that have been parasitized by a species of small wasp that do not sting people. These are a good sign that mother nature is

helping defend your garden! “Aphid mummies,” are bronze or tan in color and appear ‘puffed up’ when compared to living aphids.

- Because aphids can reproduce extremely rapidly, they should be controlled as soon as they are found. If you only find a few aphids, squish them, or break off infested leaves and remove them from the garden.
- Both organic and synthetic insecticide sprays are available to control aphids in the vegetable garden. When using either, make sure to cover plants completely, especially the backside of leaves, since aphids often shelter in pockets and crevices underneath leaves and in buds. Repeated applications are usually necessary to control this pest.
- Organic insecticides that are effective for aphid control in vegetable gardens are insecticidal soap, pyrethrin, and neem oil. For these products, vegetables can be harvested from treated crops the same day of application.
- Aphids also have many natural enemies, including ladybugs, parasitic wasps, and hoverfly larvae. In landscape plants, natural enemies can often be relied upon to clean up aphid infestations. In vegetable gardens though, aphid outbreaks usually cause lasting damage before natural enemies can reduce their levels.

  Read more at:
  https://pender.ces.ncsu.edu/2020/10/how-to-control-aphids-on-vegetable-crops/

Gail Gredler, home horticulturist with the Oregon State University Extension Service, offered some strategies to keep aphid damage at a minimum without resorting to toxic chemicals. Because there are so many kinds of aphids with varying life cycles, she recommended the following diverse array of aphid control strategies:

- Use smart landscape design. Do not have aphid-attracting plants where aphids or their honeydew will do harm. For example, birches are notorious aphid-attractors. Do not plant birches near driveways or decks, or your vehicles and deck will be sticky with honeydew.
- Keep plants healthy. Plants with adequate supplies of nutrients, water and light can fend off aphids more easily than sickly or stressed plants. Avoid over-fertilizing. Succulent new growth attracts aphids. The use of slow-release or organic fertilizers helps avoid an overdose of nutrients to the plants.
- Remove aphids physically from the plants they feed on. A periodic strong spray of water with the garden hose can work wonders with aphids on rose shoots and buds, bean plants, young broccoli and cabbage shoots and other tender garden foliage. Prune off damaged foliage.
- Also, yellow sticky aphid traps, sold in garden stores, trap flying aphids in a non-toxic sticky substance. Quarantine aphid-infested house plants.
- Introduce or encourage natural aphid predators. Avoid the use of broad-spectrum pesticides which kill aphid predators such as ladybugs and green lacewings. Do not purchase adult ladybird beetles, as they tend to disperse on release. A better predator to purchase may be the green lacewing, available for sale as eggs or larvae.

- The best strategy is to grow plants that attract and foster natural predators. These include yarrow, wild buckwheat, white sweet clover, tansy, sweet fennel, sweet alyssum, spearmint, Queen Anne's lace, hairy vetch, flowering buckwheat, crimson clover, cowpeas, common knotweed, and caraway.

If the above strategies just do not seem to do the trick, Gredler recommends trying the least toxic method of chemical control of aphids - commercial insecticidal soaps. These soaps, available at most lawn and garden stores, eliminate only the insects that come in direct contact with the soap.

"This means you have to spray the soap solution directly on the aphids to eliminate them," said Gredler. "Make sure to check the underside of leaves and other hard to see areas for aphids. And remember - the soap spray is only effective as an insecticide until it dries. For plants that are in the sun, evaluate an inconspicuous part of the plant first to see whether it will cause leaf burning. Always follow label instructions."

Using insecticidal soap on aphids allows predator insects, with harder bodies to survive and naturally control aphids. Commercial formulations of these soaps have been extensively evaluated on plants, so they are safer than homemade solutions, she added.

SNAILS & SLUGS:

OSU research finds slugs go 'bonkers' for bread dough. <Slug control with bread dough - Ask Extension>

Slug control with bread dough #769554: Thank you for your email and interest in our bread dough work. The recipe we used for making the dough is 500 g of All Purpose Enriched Kröger brand bleached flour, 500 mL of water (deionized for laboratory tests and bottled water for field tests), and two packets (0.25 oz) of Red Star Active Dry Yeast.

You do not need to use these exact brands.

The dough can be applied directly on the ground and one can simply remove the slugs and snails as they arrive to feed. Alternatively, you could sink a container e.g. glass jar in the soil and add the dough. With this approach I would recommend making the dough waterier (e.g. double the water) so that when the slugs/snails enter the container they will likely drown the dough works best when it is moist, if it dries out, it will not be as attractive so in dry weather we stir the dough daily and then replace it when it starts to dry. Good luck, Rory

Additional ways to control snails:

- Copper metal strips (at lease and inch wide) will function as a barrier that snails will not cross.
- Make ‘Beer traps.

How not to control snails:

- Crush all the snails you can see in your garden and be sure to leave their remains.
- Save and crush egg shells and sprinkle the crushed shells all over the garden.

- Surround your garden with barriers of broken glass or table salt.

SYMPHYLANS: *Scutigerella immaculata*

Garden symphylan, also called garden centipede, is closely related to insects. Symphylans are slender, elongated, and white with prominent, long antennae. When full grown, they are 0.5 inch long or less and have fifteen body segments and 11 to 12 pairs of legs. They may be found more than three feet below the surface of the soil.

- Reduce the amount of non-decomposed plant material and manure that is applied to the soil.
- Spot treatments with insecticide may be adequate. However, symphylans deeper in soil will eventually reinfest the root zone. If cultural methods and insecticide application are not enough to avoid damage, consider preplant soil fumigation.
- Garden symphylans are difficult to control in the home garden. The following practices have shown some value but are not dependable for consistent or effective control:
- Cultivate deep and thorough with a rotating cultivator between crops to destroy earthworm tunnels, crevices, etc., as well as to kill the symphylans and any eggs that are present.
- Cultivation may also drive the symphylans deeper into the soil and decrease feeding on plants.
- Firm packing of soil over newly planted seeds fills crevices and helps to keep symphylans out since they prefer loose, noncompacted soil.
- Symphylan populations can readily increase to high numbers in soils with high organic matter and with good moisture-holding capacity. Using sandy soils for the garden may reduce symphylan damage.
- Symphylans may damage sprouting seeds, seedlings before or after emergence, or older plants. They feed primarily on root hairs and rootlets. Feeding may stunt transplants as new roots grow out of the transplant plug.
- The economic significance of symphylan feeding decreases as plants get larger and older. However, their pitting of roots may provide entry for pathogens, regardless of plant age.
- Symphylan damage occurs in well-drained soils with high content of organic matter, and especially in farms that fertilize with manure. Symphylans do not thrive in compacted or sandy soils.
- Reduce organic matter input. Monitor where symphylans have previously been a problem to determine the need for spot treatments.
- Numerous organisms prey on symphylans, including predatory mites, predaceous ground beetles, true centipedes, and various fungi, but little is known about their effect on symphylan abundance. Consider installing and maintaining insectary plants to attract natural enemies of garden symphylans.
- Reduce the amount of non-decomposed plant material and manure that is applied to the soil.
- Wait to seed or transplant until the cover crop, soil-incorporated weeds, and manure have completely broken down.

- Pack down the soil surface after planting to reduce crop injury.
- Plant a higher seed population in problem areas to help compensate for damage.
- Visual detection of any symphylans before or at planting often indicates that symphylans are numerous enough to cause economic damage. Bait trapping is an efficient and easy sampling method. Before planting, use bait trapping to monitor garden symphylans by using the procedure described below:
- Here are two articles from the Pacific Northwest Insect Management Handbook that provide more details about symphylans:
    - Vegetable crop pests - Garden symphylan
    - Biology and Control of the Garden Symphylan

CATERPILLERS:

- Caterpillar pests are common on many landscape plants and can cause mild to severe damage depending on plant species and number of caterpillars present.
- If the damage is greater than you are comfortable with you will need to try and control the caterpillars. It is a good idea to see if natural enemies (such as parasitic flies and wasps, disease, predator insects and birds) are present in great enough numbers to keep the caterpillars in check.
- Hand-picking caterpillars from flowering plants and vegetables is also an effective method.
- Many caterpillars are very susceptible to products containing Bacillus thuringiensis. It is less effective on older larvae because they must consume it for effective control.
- There are some retail insecticide products as well as other insecticides that are labeled for these pests in ornamentals.
- Control is best achieved before caterpillars become full-grown.
- If you choose a product for controlling the caterpillars, always read and follow product label directions.
- Try growing Pollen & Nectar Producing Plants to attract good bugs that will eat Loopers.
- Use your hands to pick the Loopers off your plants and drop them into soapy water. Or squish them!
- Natural enemies of cutworms include predators such as ground beetles, rove beetles, spiders, wasps, toads, parasitic nematodes, and birds. Encouraging natural enemies can help keep cutworms under control.