GARDENER'S SUPPLY COMPANY

Beneficial Bugs Garden Pack

The Beneficials Garden Pack includes three species that prey on over 250 kinds of garden pests. You get 1,000 ladybugs, 1,000 lacewing eggs and 1,000,000 beneficial nematodes.

Before applying chemical dusts or sprays in your garden, please check the label to see how beneficial insects could be affected. You'll want to avoid spraying insecticides that specifically kill beetles when larvae and eggs are present.

Ladybugs

The convergent ladybug (*Hippodamia convergens*) is the most common species of lady beetles found in North America. The adults and larvae feed on aphids, scale insects, mealybugs and spider mites. They will remain in the area to feed and reproduce as long as there is an immediate supply of food available.

When Ladybugs Arrive

The ladybugs are packed inside a mesh bag with a moist cotton ball and shavings. If you are unable to release the ladybugs immediately, you can store them in the refrigerator for up to two weeks. If you must store them, be sure to sprinkle the cotton ball and the mesh bag with water. Do not store the ladybugs more than two weeks.

Releasing Ladybugs

Release the ladybugs outside as soon as possible. Select an area in the garden that is infested with a food source for your ladybugs and water the area well.

Release your ladybugs in the cool of evening when aphids, mites and mealybugs are more likely to be active. You may release ladybugs gradually or all at once. Gently place a dozen or so of the ladybugs at the base of each plant.

For best results, enclose the plants and ladybugs with polyester row cover such as our All Purpose Fabric (see *Ordering Information*). Leave the cover on for several days to encourage the ladybugs to stay in that area. Water the garden regularly, especially if you are experiencing dry weather.

You can encourage ladybugs to stick around by creating a habitat that provides food for them once they've cleaned up the pests in your garden. Plant pollen and nectar flowers such as dill, fennel or buckwheat.Plant tansy, an herb with small yellow blooms, to entice not only your own ladybugs but others in the neighborhood.

If plants aren't an option, try our Ladybug Attractant — a powerful pheromone-based liquid that can lure hundreds of ladybugs to your garden (see *Ordering Information*). The scent is placed on unpainted objects like rocks, fences, or tree trunks in the area. Finally, provide a hedgerow, windbreak, or permanent border to shelter ladybugs from wind and rain.

Using a Shelter

The Ladybug Hibernation Box can be used as a receptacle for releasing ladybugs in early spring or as a shelter when temperatures reach 40 degrees F or less. Ladybugs will require aphids or other food nearby if they are to stay in the area. Place a few layers of dry leaves on the floor of the box to help simulate a natural habitat for your ladybugs. Be sure the leaves do not block the entrance "crevices."

Before releasing the ladybugs, water the area surrounding the shelter (including the ground, foliage and branches).

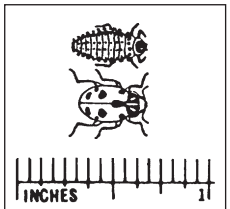
Gently pour your ladybugs into the shelter in the evening. Do not release them in direct sunlight or during the hottest part of the day; the hot sun will discourage ladybugs from searching for food and a very hot shelter could harm them.

Drape the shelter and surrounding plants with row cover or a plain white sheet for a few days to encourage ladybugs to stay in the area and begin feeding. Water the area regularly, especially if you are experiencing dry weather.

Leave the Hibernation Box out all year—ladybugs are more likely to use the shelter in the fall to hibernate if it is a permanent part of their habitat. If you are releasing ladybugs into the Hibernation Box, house or other shelter, please be sure to also read the directions that are included with the box, house or shelter.

What do Ladybugs Look Like?

Most gardeners are familiar with adult ladybugs. They are small, red beetles with distinctive black dots on their wings. These adult beetles mate and produce a new generation of beetles which are very different in appearance. They are soft-bodied, alligator-shaped larvae with gray bodies and red, orange, or yellow splotches.



Adult ladybugs look very different from their young.

Watch carefully for these larvae because they consume the majority of the pests. Also look for ladybug eggs, which are found in clusters of 10 to 50 on leaves and stems.

Beneficial Nematodes

The beneficial nematodes you receive are a mix of two aggressive strains of nematodes called *Steinernema carpocapsae* (SC), and *Heterorhabditis bacteriophora* (HB). SC are shallow soil dwellers occupying the top 1" to 3" of the soil. The HB strain burrow as deep as 5" to 6" and offer a secondary barrier to grubs that are emerging from or returning to winter soil depths.

These nematodes will not harm people, pets, plants, fish, beneficial insects or earthworms. Children and pets can play in the yard immediately after treatment. The nematodes will not affect drinking water supplies.

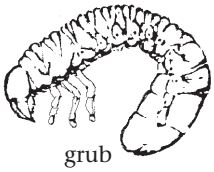
Upon Arrival

Nematodes should be applied when soil temperatures are between 35 and 85 degrees F. If you are not able to apply the nematodes right away, you may store the sponge up to 1 month in the refrigerator (40 to 50 degrees F), but it must be kept damp! Add a few drops of room temperature water to the sponge to keep it moist.

Parasitic nematodes invade the bodies of harmful grubs or larvae and release a deadly bacteria. Once the nematode

Over, please

attacks its host, death occurs within 24 to 72 hours. Nematodes continue to reproduce and are effective during the entire growing season, providing the soil is kept moist, and can survive mild winters.


grub

The nematodes will control the following larvae:

- Japanese beetles
- European/masked chafers
- sod webworms
- June beetles
- Colorado potato beetles
- strawberry root weevils
- Asiatic beetles
- Bill bugs
- May beetles
- fungus gnats
- cucumber beetles
- onion maggots
- mole crickets
- bill bugs
- thrips
- cutworms


cutworm

Nematodes are microscopic in size. They can't be seen with the naked eye, but you can see them through a microscope. If you've delayed application and you're not sure if the nematodes are still active, here's an easy way to check. (NOTE: Since nematodes could suffocate and perish if they are left in a small amount of water, you should perform this test just prior to application! Be sure to have all other supplies ready before you begin.)

Place the sponge in a clear glass filled with water that has been allowed to reach room temperature, swish it around, and wait several minutes. If you watch closely, the water should move slightly with nematode activity. Immediately after you've noticed their movement, mix them into a gallon of room temperature water.

For Best Results

Apply the nematodes in early spring and when the soil temperature is between 35 and 85 degrees F. Apply nematodes again in late summer or early fall.

Nematodes can be applied with an injector system or diluted and applied with a conventional sprayer, watering can or pail. A package of one million treats 2,000 sq ft. For best results, please follow these helpful hints:

- Apply the nematodes at dusk or on a warm, rainy day. Full sunlight can kill nematodes before they are able to tunnel under the soil.
- Check to be sure the soil is moist. Nematodes require moisture for their survival. If you have been experiencing a dry growing season, it is essential to water the soil thoroughly before applying the nematodes.
- When mixing the nematodes in water, do not allow the container to sit for more than 2 hours or the nematodes may drown. Stirring the nematode solution frequently during application will prevent the nematodes from settling to the bottom and ensure an even distribution.

Making the Concentrate

1. Remove the sponge from the package and rinse it as completely as possible into one gallon of room temperature water. The bag containing the sponge may have nematodes inside, so rinse it into the container as well. This is your concentrate.

2. You now have a concentrate which can be put through an injector system or diluted and applied with a conventional sprayer, watering can or pail. If you're using a hose-end sprayer, test it first with plain water to see how much area you cover at a steady pace. Make any adjustments before adding the nematode concentrate.

If you are using a watering can for application, pour a small amount of the concentrate into the can and dilute it with water. Dilute and spray, or drench to evenly cover your lawn. Repeat until the desired area is treated.

3. Important: The nematodes must be watered into the ground. A rinse of plain water after they have been applied will help ensure that they have been carried into the soil. Keep the area moist for the next couple of days to help the nematodes become established in the soil. You can expect results within a few weeks in the treated areas only.

Lacewing Eggs

Upon Arrival

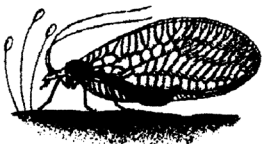
At 80 degrees F, Lacewing eggs (*Chrysoperla carnea)* will hatch in about 4 days. Lacewings are cannibals and hatch with a voracious appetite. If one lacewing hatches before the rest while still in the shipping package, it is likely the other unhatched eggs will be eaten. Therefore, it is best to distribute the eggs outdoors as soon as possible, especially if the eggs are exposed to temperatures nearing 80 degrees F.


lacewing larvae

Lacewing larvae are very active and look like flat alligators, but with large, piercing, laterally opposed tusks. Lacewing larvae feed on hundreds of pests including aphids, cutworms, corn borers, cucumber beetles, scales, whitefly larvae, mites, mealybugs and small caterpillars.

Newly hatched larvae are very small, no bigger than their egg. Distribute the eggs in the area where you have pests by placing them on the leaves within the plant canopy, shaded from direct sun. Shield the eggs from water for a few days with a garden cover or other form of protection.

Each larva will feed for about three weeks, then will roll up into a little white pupae. About one week later, the adult will emerge, ready to mate and lay about 100 more eggs. The complete Lacewing life cycle takes 4 to 6 weeks.


adult lacewing

Ordering Information

#33-446 . . . . .Beneficial Bugs Garden Pack
#32-646 . . . . . .All Purpose Fabric
#05-262 . . . . . .Ladybug Attractant
#31-409 . . . . . .Ladybug Hibernation Box

To place an order, please call or see our web site for current prices.