

## BENEFICIAL INSECTS

Many insects in the garden are not harmful pests. Of the over one million known species of insects, more than half spend their time hunting and eating other insects or their eggs. These are called predators, parasites or, more generally, beneficial insects. Smart gardeners do everything they can to protect and encourage the presence of beneficial insects in their garden. This includes limiting the use of chemical insecticides whenever possible, especially those that kill a broad spectrum of insects. The presence of target "bad bugs" will naturally attract the associated predator insect.

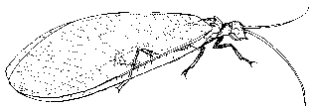
If a sufficient source of beneficials is not available naturally, they can be purchased at garden centers or through mail order catalogs. For best results don't use other insecticides for at least a month before releasing beneficials. At first, provide the new insects with water sources such as pie tins of water placed around the garden. Planting flowers around the garden will help supply nectar and honey dew for those who aren't predatory in their adult stage but produce a predacious immature stage.

### Ladybugs



Ladybugs feed on aphids, scale insects, spider mites and mealy bugs. Biological supply companies collect ladybugs in the wild. They are shipped in large numbers to garden centers or sold through mail order companies. If the ladybugs were collected in their dormant phase they may fly away when released. If they were captured in their feeding phase, they will stay around the garden if there is enough to eat and drink. If you can get them to stay around long enough to lay eggs, each larva will eat about 400 aphids. One adult ladybug will eat over 1,000 aphids. Release them in the evening after watering with a sprinkler. Foods like simulated honeydew mixtures (Honeydew or Wheast) may keep the lady bugs from moving on to where the aphids look greener.

### Lacewings



Lacewings attack scales, mealybugs, whiteflies, caterpillars, leafhoppers, and thrips. The larvae are like little flat alligators that chase down their prey, spearing them with hollow tusks. They also feast on eggs. If you detect any movement at all in a purchased batch, release them right away because they will eat each other. Hatching can be delayed a few days by refrigeration. Sprinkle the eggs on the pest-infested plants on a warm day. The larvae only feed for 1-3 weeks before they become adults, so it's a good idea to get staggered shipments. Adult lacewings are a beautiful green or brown with yellow eyes, and eat only honeydew and pollen.

## Parasitic Nematodes



Parasitic nematodes are microscopic worms that control pests that spend at least some time in or on the soil. Examples are cabbageworms, cutworms, Colorado potato beetle larva and cabbage loopers. The nematodes won't harm plants, earthworms, birds, bees, beneficial insects or humans. They enter the pest's body and release deadly bacteria or eat them from the inside out, usually killing within 48 hours. So far nematodes haven't been effective in Eastern Washington because soil temperatures need to be at least 53°F and the soil moist for them to survive. Our soil temperatures do not reach 53°F soon enough for the nematodes to be effective on early season pests. Research is currently underway for hardier strains of parasitic nematodes.

## Parasitic Wasps



These tiny wasps (most are less than 1/8" long) seek out other insects' eggs and lay their own eggs inside. They kill as many as two hundred kinds of pests. Most common hosts are caterpillars. Other hosts include beetles, cockroach egg capsules and other wasps. Parasitic wasps emerge as adults after eating the contents of the host egg. One single wasp may parasitize as many as one hundred pest eggs. Release timing is important. Start releasing them in stages when you first see moths and butterflies in your garden.

Beneficial Insect	Pests Attacked	Sources
Lady bugs	aphids, scale insects, spider mites, mealy bugs.	Arbico Biofac, Inc Gardens Alive! Natural Pest Controls
Lacewings	scales, mealybugs, whiteflies, caterpillars, leafhoppers, thrips	Arbico Biofac, Inc Gardens Alive! M&R Durango, Inc. Natural Pest Controls Nature's Control Rincon-Vitova Insectaries, Inc.
Nematodes	cabbage worms, cutworms, wireworms, root maggots, borers, cabbage loopers, Japanese beetles, Colorado potato beetles, June beetles	Biofac, Inc. Gardens Alive! M&R Durango, Inc.
Parasitic Wasps	cutworms, corn earworms, hornworms, gypsy moths, leafrollers, cockroach eggs, beetles	Arbico Biofac, Inc. Gardens Alive! Rincon-Vitova Insectaries, Inc.



## Product Supplier Addresses

Arbico  
P.O. Box 8910  
Tucson, AZ 85738-0910  
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Natural Pest Controls  
8864 Little Creek Dr.  
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[www.naturalpestcontrol.com](http://www.naturalpestcontrol.com)

Biofac, Inc.  
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Nature's Control  
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