



Healthy Garden Tips

Web site: <http://cenapa.ucdavis.edu>

Telephone: 707-253-4221

University of California Cooperative Extension – Napa County

INCREASING BENEFICIAL ORGANISMS IN YOUR GARDEN

This handout explains some steps to naturally control damaging insects in your garden with beneficial organisms. Beneficial organisms (also known as natural enemies, biocontrol agents, and ‘good’ bugs) control insects that damage your flowers and vegetables. Beneficial organisms can be parasites, predators, or microbes that eat or kill insects and mites. The best way to increase beneficial organisms in your garden is to **conserve and enhance** the ones that are already there. You can also try to **attract** additional beneficial insects by planting flowers, shrubs, etc. that they like and meet other habitat needs. Finally you can **supplement** or buy certain types of beneficial organisms.

Some examples of beneficial organisms that may already be in your garden are pathogens (fungi and bacteria that attack insects; yes, insects can get sick and die), predators of all kinds (lace wing and hover fly larvae, lady beetles and their larvae, spiders, and predatory mites), parasites (including tiny parasitic wasps, midges, and flies.)

CAN SERVE AND ENHANCE: PROTECT AND ENCOURAGE THE ONES YOU HAVE

Avoid Pesticides Whenever Possible. The most important thing you can do to maintain a healthy population of beneficial organisms in your garden is to avoid using broad spectrum pesticides. Pesticides include insecticides, fungicides, and soil fumigants. Broad spectrum pesticides also continue to kill for a while after being applied. Sometimes, by killing non-target natural enemies you can create a new problem different from the one you were trying solve. Pesticides should be your last resort!

1. First you need to identify the insects, determine if they are the pests causing the problem. Be sure you know the difference between good bugs and bad bugs; they can look very similar, and sometimes the good bugs can look pretty ugly (e.g., lady beetle larvae). If you need help identifying insects, catch some in a glass or plastic container and bring them to your local UC Master Gardeners’ of Napa County or Agricultural Commissioner’s office for correct identification. This way you will know if it is a pest and what if anything needs to be done.
2. Decide how much damage you and the plant can tolerate. When you reach that critical level of damage use the least toxic solution.
3. Choose your least toxic solution. For example, a strong spray of water may be effective to get rid of aphids on roses, or a damp rolled up newspaper can collect earwigs for disposal. Some other low toxic options might include soap sprays, oils, microbial agents, and botanical products.
4. If you decided a stronger pesticide is needed, make sure it is appropriate for that plant and pest and follow the label exactly. Only use the recommended amount and use only where it is needed.

Provide Food, Water, and Shelter. Beneficial insects need food, either in the form of their prey, or in the form of pollen and nectar, or both. Beneficial insects often feed on the insects only during their immature stage. Adults feed on nectar and pollen or eat insects and supplement their high protein diet with nectar and pollen. You can attract and keep a wide variety of beneficial insects in your garden by planting a variety of plants with various heights, flower colors and shapes,

blooming times, and long blooming periods. Providing a continuous variety of blooming flowers will help maintain a beneficial population. Plants with many small blossoms that produce pollen and nectar are especially useful (see table on back). These types of plants can also be planted in open areas around your garden in what is sometimes called a hedgerow. Many of these plants do double duty providing shelter and food for the pests-for example, if there aren't enough aphids in your yard, lady beetles will leave in search of a better location (one with more aphids). Keeping your soil healthy by adding organic matter such as compost will keep your plants healthy and provide food for beneficial insects especially those that spend all or part of their cycle in soil.

Exclude Ants. While ants can sometimes be beneficial because they eat insects, aerate the soil and recycle dead animals and vegetable material, they can also be pests. Ants like to farm aphids and scale because they feed on the sweet excretions called 'honeydew'. Like a smart farmer, ants will protect aphids and scale from insects that prey on them and will actually move aphids to new areas of the host plant. So exclude ants by using sticky traps or other non-toxic means at the plant base.

ATTRACT: LURING MORE BENEFICIAL ORGANISMS TO YOUR GARDEN

By providing year-round food, as well as water and shelter, you will make your garden more attractive to all beneficial insects. If you have unused areas surrounding some- or all- of your garden you can plant plants that specifically attract and support beneficial insects. These areas are sometimes called hedgerows. So rather than just planting within your garden, you will create an environment around your garden that will be very attractive to beneficial insects. Some useful plants are listed in the table below.

BUY: PURCHASING BENEFICIAL ORGANISMS

You can purchase a variety of different biological control agents. Although this seems like the fastest way to increase numbers of beneficial organisms in your garden, unless your garden is hospitable to them, you may not see a lot of benefit. If they do not find food and shelter they will migrate out of your garden into your neighbor's or the one down the street, or die. Also, certain kinds of biological control agents are very specific (e.g., certain types of parasitic wasps attack only one kind of prey.) Insect identification of your target pest is very important.

SMALL FLOWERING PLANTS

Common Name	Botanical Name
<i>Carrot Family</i>	
Caraway	Carum carvi
Coriander (cilantro)	Coriander sativum
Dill	Anethum graveolens
Fennel	Foeniculum vulgare
Bishop's Flower	Ammi majus
Queen Anne's Lace (wild carrot)	Daucus carota
Toothpick ammi	Ammi visnaga
Wild Parsnip	Pastinaca sativa
<i>Sunflower Family</i>	
Blanket Flower	Gaillardia
Coneflower	Echinacea spp.
Coreopsis	Coreopsis spp.
Cosmos	Cosmos spp.
Goldenrod	Solidago spp.
Sunflower	Helianthus spp.
Tansy	Tanacetum vulgare
Yarrow	Achillea spp.

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Mustard Family	
Basket-of-Gold Alyssum	Aurinium saxatilis
Hoary Alyssum	Berteroa incana
Mustards	Brassica spp.
Sweet Alyssum	Lobularia maritime
Yellow Rocket	Barbarea vulgaris
Wild Mustard	Brassica kaber
Other Plant Families	
Buckwheat	Fagopyrum sagittatum
Cinquefoil	Potentilla spp.
Milkweeds	Asciepias spp.
Phacelia	Phacelia spp.

TREES, SHRUBS AND VINES

Common Name	Botanical Name
Butterfly Bush	Buddleia spp.
California Buckeye	Aesculus californica
California Lilac	Ceanothus spp.
Calif. Bay Laurel	Umbellularia californica
Coyote Bush	Baccharis pilularis
Dogwood	Cornus spp.
Elderberry	Sambucus spp.
Honey suckle	Lonicera spp.
Manzanita	Arctostaphylus spp.
Mulefat	Baccharis salicifolia or B. glutinosal
Oaks	Quercus spp.
Rosemary	Rosmarinus officilias
Sage	Salvia spp
Toyon, Calif. Holly	Heteromeles arbutifolia
Wild Rose	Rosa California
Willow	Salix spp.

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