

A close-up photograph of several green aphids on a leaf. One aphid is in the foreground, facing right, with its antennae and legs clearly visible. Another is slightly behind it, and a third is further back. The leaf is a mix of green and reddish-brown, suggesting it might be a chard or similar leafy vegetable. The background is a solid green color.

ORGANIC INSECT PEST MANAGEMENT *FOR VEGETABLE AND FLOWER* GARDENS

Summit[®]
... responsible solutions.



melindamyers.com

What is Organic Gardening?

"It is a philosophy of gardening that supports the health of the whole system. In an organically managed yard or vegetable garden the emphasis is on cultivating an ecosystem that sustains and nourishes plants, soil microbe and beneficial insect rather than simply making plants grow."

Build Healthy Soil

■ AMENDING THE SOIL WITH ORGANIC MATTER

- Improves drainage in heavy soils
- Increases water holding ability in sandy soil
- Compost amended soils
 - Improved plant growth
 - Increased drought tolerance
 - Fewer insect and disease problems

■ LASAGNA GARDENING

■ HUGELKULTUR GARDENING

■ GREITEN TECHNIQUE

■ COVER CROPS & COMPANION PLANTING

- Nitrogen fixers to feed soil
 - Members of the pea family fix nitrogen from atmosphere and add to soil
- Deep rooted plants - melons and tomatoes - natives
 - Create pathways for water to move through soil
 - Roots break up compacted soil
 - When roots die, adds organic matter deep in soil
 - Help bring nutrients closer to surface for other plants
- Cover crops help suppress weeds

Plant Selection

■ MATCH THE PLANT TO THE GROWING CONDITIONS

- Cold and heat tolerance
- Sunlight, soil type, moisture and wind

■ LOOK FOR PEST RESISTANT PLANTS AND CULTIVARS WHENEVER POSSIBLE

- These plants tend to be less appealing to insects
 - Healthy plants with dark green leaves
 - Red leafed varieties
 - Thicker leaves
 - Waxy or hairy leaves

Provide Proper Planting and Care

■ ROTATE PLANTINGS

- Out of family
- At least 3 years if possible
- In small spaces

■ DIVERSIFY PLANTINGS

- Garden of unrelated plants
- Different colors, shapes
 - Harder for insects to locate those they prefer
- Include look-alikes
 - This misdirection results in wasted energy

■ COMPANION PLANTINGS

- Look for research based information and complete details
 - *Plant Partners, Science-Based Companion Planting Strategies for the Vegetable Garden*, by Jessica Walliser
- Marigold toxic to nematode, but must be tilled into soil
- Marigolds and nasturtiums did help reduce cucumber beetles and squash bugs
 - Onions and marigolds discourages egg laying of onion root maggot

Summit Responsible Solutions

Protecting you, and the environment we live in.

Summit Mosquito Dunks® and Mosquito Bits® are America's favorite biological mosquito controls because they kill mosquitoes before they become biting, disease-spreading adults. The active ingredient is *Bti* (*Bacillus thuringiensis israelensis*), a bacterium that's deadly to mosquito larvae but harmless to other living things.

Summit Mosquito Bits® can also be used to control fungus gnats on indoor plants.

Summit® Year-Round® Spray Oil is an organic, environmentally responsible way to kill insect pests on even the most sensitive plants. Summit® Year-Round® Spray Oil has no bad odor, and it can be used on garden plants and fruit trees right up to the day of harvest. Use it to kill insects on indoor and outdoor plants.

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- Flea beetles trapped by spicier members of the cabbage family
 - Cole crops and thyme, dill, sage, chamomile or hyssop help deter egg laying of cabbage worms
 - Planting 3 or more different species together was more effective than trap plant
 - Collards and calendula help deter aphids
 - Tomatoes and basil
 - Basil helps mask the tomatoes from thrips
 - May be worth adding basil to flower garden if thrips are a problem
 - Sweet and hot cherry peppers
 - Plant hot cherry peppers around sweet pepper planting to lure and trap pepper maggots
 - Peppers and onions and other members of the allium family
 - Interplant onions with peppers to deter green peach aphids on peppers
 - Blue Hubbard squash and other vine crops to trap squash vine borer
 - Plant blue Hubbard squash 3-4 weeks before other vine crops and at the periphery of the garden, at least several feet away from other vine crops
 - Zucchini and nasturtiums
 - Interplanting helped reduce the number of squash bugs
 - Hedgerows and lower cover crops to help impede pests moving into garden beds
- **PROPER SPACING**
- Maximize air and light penetration to reduce risk of disease
- **PROPER WATER**
- New plantings
 - Keep soil around roots moist
 - Gradually increase time between watering
 - Established plantings

- Water thoroughly, but less frequently
 - Apply water to soil surface
 - Avoid overhead watering that can lead to disease
- **WEED MANAGEMENT**
- Relationships Between Insect Pests and Weeds: An Evolutionary Perspective
 - Weeds compete with desirable plants for water and nutrients
 - Some weeds serve as host for beneficial insects
 - Some weeds serve as host for insect pests and disease
- **ORGANIC MULCH**
- Conserve water and suppress weeds
 - As it decomposes, adds organic matter to soil
 - Leaf mulch is home to many beneficial insects
 - Mulch can also serve as home for insect pests, like squash bugs
 - Living mulch
 - Sedges
 - Low growing plants interplanted with desirable plants

Work with Nature

- **INVITE BENEFICIAL INSECTS THAT HELP MANAGE GARDEN PESTS**
- **PARASITIC WASP ON TOMATO HORNWORM SHOWN**
- **GROW PLANTS THAT ATTRACT BENEFICIAL INSECTS**
 - Attracting Beneficial Insects
 - Predators
 - Insect Parasitoids: Important Natural Enemies of Pests
 - Sweet alyssum
 - Dill
 - Fennel



About Melinda

Nationally known gardening expert, TV/ radio host, author & columnist Melinda Myers has over 30 years of horticulture experience and has written over 20 gardening books, including Can't Miss Small Space Gardening, the recently revised Midwest Gardener's Handbook, and Jackson and Perkins' Beautiful Roses Made Easy. She hosts the nationally-syndicated "Melinda's Garden Moment" program airing on radio stations throughout the U.S. Melinda also hosts the internationally distributed Great Courses "How to Grow Anything" DVD/ Instant Video series, including the latest Food Gardening for Everyone DVD set. She is a columnist and contributing editor for Birds & Blooms magazine, and a nationally-distributed gardening column. She appears regularly as a guest expert on national and local television and radio shows.

Visit Melinda's website, melindamyers.com

- Thyme
- Lavender
- Penstemon
- Columbine
- Aster
- Sedum
- Yarrow
- Monarda
- Goldenrod
- Dill or cilantro with eggplant
 - Herbs help attract predatory insects that help control Colorado potato beetles
- Cole crops with members of the Aster family
 - Flowers attract beneficial insects that help manage aphids
- Lettuce or grapes and sweet alyssum
 - Attract predators and parasitoids that help manage aphids
- **INVITE TOADS, FROGS AND SONGBIRDS INTO THE GARDEN**
 - Create the habitat
 - Leaf litter and plants for shelter
 - Water
 - Food
 - ✦ Insects
 - ✦ Seed and berry producing plants
 - Shelter
 - ✦ Evergreens
 - ✦ Shrubs
 - ✦ Leaf litter
 - Tolerate some insect damage
 - Need food (insect pests) to attract predators

Monitor for Pests

■ **CATCH THEM EARLY**

- Fewer insects
- Easier to manage
 - Spider mites can complete life cycle in one week if conditions are favorable

Determine if Control is Needed

■ **DAMAGE NOT SEVERE ENOUGH TO WARRANT CONTROL**

- Spittlebug shown

■ **CONTROL IS NOT EFFECTIVE WHEN PROBLEM DISCOVERED**

- Galls shown

■ **DAMAGE IS DONE AND THE PEST IS GONE**

- Rose slug shown

■ **AN ABIOTIC DISORDER**

- Blossom end rot (physiological disorder) shown

Manage Insect Pests & Diseases

■ **TOLERATE DAMAGE AND WAIT FOR NATURE TO MANAGE**

■ **SANITATION**

- Remove diseased portion or plant
 - Before the disease spreads
 - Disinfect tools between cuts with 70% alcohol
- Fall cleanup

■ **REMOVE WEEDS THAT CAN HOST INSECTS AND DISEASE**

■ **TRAPS**

- Beer bait and boards for slugs and snails

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■ BARRIERS

- Cutworm collars
- Row Covers
 - Cabbage worms
 - Bean and Japanese beetles
 - Squash bug and squash vine borer
 - Cucumber beetles

■ PHYSICALLY REMOVE

- Hand pick
- Vacuum
- Prune off infested portion
- Kids - pluck, drop and stomp

■ ORGANIC CONTROLS

- Organic Pesticides and Produce
- Summit Year-Round Spray Oil (horticulture oil)
 - Organic and OMRI listed
 - Contact insecticide
 - Controls scale, mealy bugs and more
- *Bacillus thuringiensis kurstaki* (*Btk*)
 - Summit Biological Caterpillar & Webworm Control
 - Naturally occurring soil bacteria
 - This strain kills caterpillars, NOT sawflies
 - Sawflies
- Insecticidal soap
 - Contact insecticide effective on soft bodied insects
- Neem
 - Repellent and broad spectrum insecticide
- Pyrethrin
 - Plant derived contact insecticide
- Azera (Pyrethrin & Neem)
 - More effective than either alone
- Spinosad
 - Highly toxic to bees
 - Little impact once dried

Always read and follow label directions

Organic Options for a Few Common Pests

■ APHIDS AND MITES

- Suck plant juices
- Secrete excess as clear, sticky substance (honeydew)
- Bronzing, yellowing of leaves, stunted growth
- Control with:
 - Strong blast of water
 - Trap aphids with yellow bowl of soapy water
 - Horticulture oil
- Sooty mold can develop on honeydew and block sunlight from reaching leaves

■ CABBAGE WORMS

- Attack members of cabbage family
- Eat holes in the leaves
- Eggs, droppings and caterpillars on harvest
- Control:
 - Prevent with row covers
 - Hand removal
 - *Btk*

■ JAPANESE BEETLES

- Populations in Canada
- Populations in the United States
- Attack over 300 plants
- Eat holes in leaves, flowers and damage fruit
- Control:
 - Early intervention to reduce season-long population
 - Knock into can of soapy water or vacuum
 - Row cover on self-fertile plants
 - *Bacillus thuringiensis galleriae* (*Btg*)
 - ◆ BeetleGone! or BeetleJus

■ BEAN BEETLES

- Pests of Beans and Peas

■ SEEDCORN MAGGOT

- Poor germination or weak and deformed seedlings
 - Plant or replant when soil is warmer

■ SQUASH VINE BORER

- Black and orange day flying moth
- Lays eggs at base of plant
- Egg hatches, borer moves into and feeds on inside of stem
- Plant suddenly wilts and may die
- Control:
 - Leave roots intact, slice stem and kill borer, bury stem
 - Row covers at planting until flowering begins
 - Blue Hubbard squash as trap plant

■ SQUASH BUGS

- Suck plant juices and transmit deadly cucurbit yellow vine disease
- Control:
 - Remove weeds, mulch and debris at base of plant
 - Knock into can of soapy water
 - Sprinkle diatomaceous earth or spray base with pyrethrins
 - Row covers at planting until flowering begins

■ STINK BUGS

• How to Manage

- Early intervention
- Hand pick
- Row cover on self-fertile plants



Contact Diggers Hotline or your local underground utility locating service BEFORE you start digging - It's a FREE service

In Wisconsin file online at diggershotline.com or anywhere in the U.S., including Wisconsin, call 811 at least 3 business days before putting the first shovel in the ground. Once your request is received, Diggers Hotline (or your local locating service) contacts all the appropriate underground utilities. The utility's locators will mark the location of the underground utilities in the work area. Avoid digging near the marks to reduce the risk of damage, personal injury or even death.

DIGGERS  HOTLINE[®]



UPCOMING WEBINARS & APPEARANCES

February 14th - 16th

NARI Milwaukee Spring Home Improvement Show

- *Growing Indoor Plants to Brighten Your Home and Relieve Stress*
- *Fragrant Plants Sure to Elevate Your Mood and Garden Enjoyment*
- *Create an Oasis on a Deck, Patio or Balcony*

Webinar February 19th

Strategies for Managing Invasive Plants

Webinar February 26th

Create a Beautiful Shade Garden

Webinar March 12th

Grow Pollinator-Friendly Spring and Summer Flowering Bulbs

Webinar March 19th

Be a Waterwise Gardener

Webinar March 26th

Succession Planting and Crop Rotation

Webinar March 27th

Rain Garden Q&A

Webinar April 2nd

Container Gardens for Sun and Shade

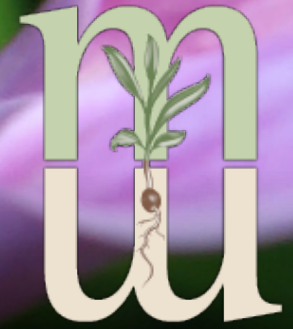
Visit my website, melindamyers.com for updates on future events.



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