

# ORGANIC PEST CONTROL FOR VEGETABLE AND FLOWER GARDENS

**Summit**<sup>®</sup>  
*...responsible solutions.*



[melindamyers.com](http://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

### ■ 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

## 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

- Powdery mildew resistant Profusion zinnias shown
- Downy mildew resistant impatiens - Bounce Pink Flame shown
- Tomatoes resistant to disease - Celebrity shown

## 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
- Marigold toxic to nematode, but must be tilled into soil
- Marigolds and nasturtiums did help reduce cucumber beetles and squash bugs
- Flea beetles trapped by spicier members of the cabbage family
  - Planting 3 or more different species together was more effective than trap plant

## 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.

### Learn More





## ■ 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

## 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
- Thyme
- Lavender
- Penstemon
- Columbine
- Aster
- Sedum
- Yarrow
- Monarda
- Goldenrod to name a few

### 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



### 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 over 115 TV and radio stations throughout the U.S. Melinda also hosts the internationally distributed Great Courses "How to Grow Anything" DVD series, including the latest *Food Gardening for Everyone* DVD set. She is a columnist and contributing editor for *Birds & Blooms* magazine, writes the twice monthly "Gardeners' Questions" newspaper column 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](http://melindamyers.com)

## **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

### ■ **BARRIERS**

- Cutworm collars

### ■ **PHYSICALLY REMOVE**

- Hand pick

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

### ■ **ORGANIC CONTROLS**

- Organic Pesticides and Produce
- Organic Insecticides
- Summit Year-Round Spray Oil (horticulture oil)
  - Organic and OMRI listed
  - Contact insecticide
  - Controls scale, mealy bugs and more
- *Bacillus thuringiensis kurstaki* (Btk)
  - 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*

## **UPCOMING APPEARANCES & WEBINARS**

*Check often as more appearances and webinars continue to be added.*

**May 1<sup>st</sup>**

**Ebert's Greenhouse Village**  
*Cutting Gardens Throughout the Seasons*

**May 4<sup>th</sup> Webinar**

*Food Gardening in Containers*

**May 12<sup>th</sup> Webinar**

*How to Plant a Rain Garden*

**May 18<sup>th</sup>**

**Roots & Branches  
Community Event**  
*Food Gardening for Your Health and Well Being*

**May 28<sup>th</sup>**

**Ebert's Greenhouse Village**  
*Rose Care 101*

**June 1<sup>st</sup> Webinar**

*Creating a Pollinator Paradise*



# 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

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seasonal prize!

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## Diseases Occur When...

### ■ PATHOGEN, SUSCEPTIBLE PLANT AND WEATHER RIGHT FOR DISEASE

- Remove one and eliminate the problem

## Organic Control of a Few Common Diseases

### ■ POWDERY MILDEW

- Fungus
- White powder-like substance on the leaves
- Leaves yellow, brown and may drop
- Control:
  - Resistant plants
  - Proper siting and spacing
  - Thinning stems in spring
  - Sanitation
  - Masking damage
  - Summit Year-Round Spray Oil
    - ✦ Up to 30 days control
  - Cornell baking soda treatment
    - ✦ Weekly applications

### ■ LEAF SPOTS CAUSED BY FUNGUS OR BACTERIA

- Spots on leaves may enlarge and coalesce
- Spread throughout the plant
- Infected leaves may drop
- Severe cases may kill plants
- Leaf spot on Rudbeckia discussed
- Control:
  - Resistant varieties
    - ✦ AAS American Gold Rush Rudbeckia
  - Sanitation
  - Organic fungicides
    - ✦ Repeat applications usually needed

### ■ ASTER YELLOWS PHYTOPLASMA (BACTERIA-LIKE) ORGANISM

- Attacks nearly 330 different plants, including flowers and vegetables
- Disease carried by aster leaf hoppers

- Green petals
- Misshapen flowers
- Twisted and distorted leaves that turn yellow or red
- Tufts of white hairy roots
- Control:
  - Remove infected plants to prevent spread
  - Control leaf hoppers to reduce risk and prevent spread

### ■ FUSARIUM AND VERTICILLIUM WILT

- Several races of each fungi
- Block vascular system that moves water through plant
- Wilting, yellowing and death of plant
- Control:
  - Resistant varieties
  - Remove infected plants
  - Do not replant susceptible plants in this space
  - Solarization

### ■ BLACK WALNUT TOXICITY

- Symptoms resemble fusarium and verticillium wilt
- All parts of the black walnut contain juglone
- Juglone sensitive plants wilt and die or may be stunted
- Control:
  - Use juglone resistant plants
  - Avoid planting under and within 50' of black walnut
  - Grow susceptible plants in containers and lined raised beds

### ■ BACTERIAL WILT OF CUCUMBERS

- Disease Resistant Cucurbit Varieties
- Healthy plants suddenly wilt, leaves turn yellow and plant dies
- Control:
  - Resistant varieties
    - ✦ County Fair, Gemini, Little Leaf 19, Saladin
  - Control cucumber beetle that carries the bacteria
    - ✦ Knock into soapy water or vacuum
  - Row covers
    - ✦ Cover at planting until 10 days after the start of flowering



## ■ VIRUS

- Causes interesting patterns in leaves
- Distorted flowers, leaves or overall growth
- Control:
  - Remove and destroy infected plants
  - Use resistant varieties
  - Do not replant with virus susceptible plants

## It's Really Not as Bad as It Seems



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

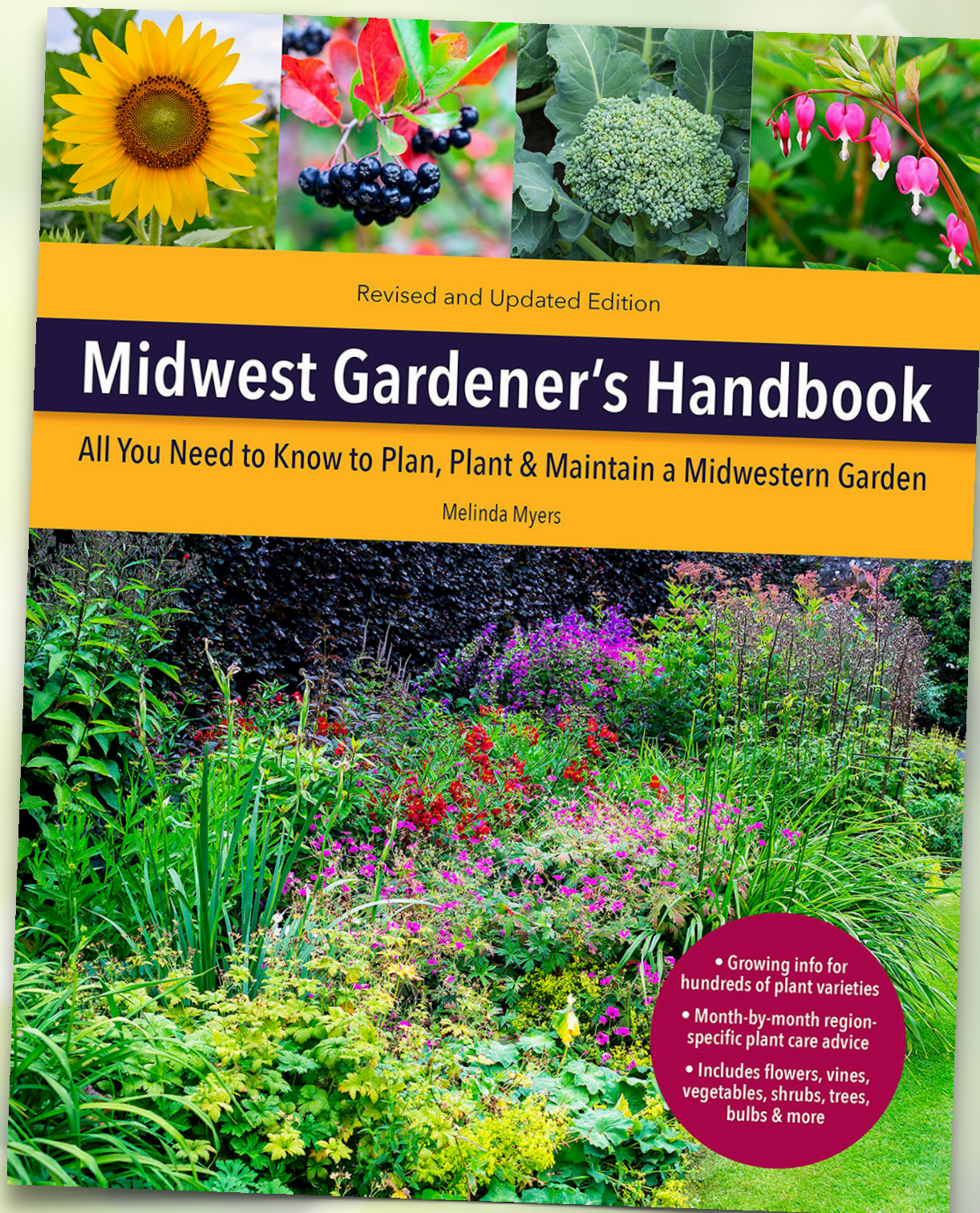
In Wisconsin file online at [diggershotline.com](http://diggershotline.com) or anywhere in the U.S., including Wisconsin, call 811 at least 3 business days before putting the first shovel in the ground. Once your request is received, Diggers Hotline (or your local locating service) contacts all the appropriate 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.





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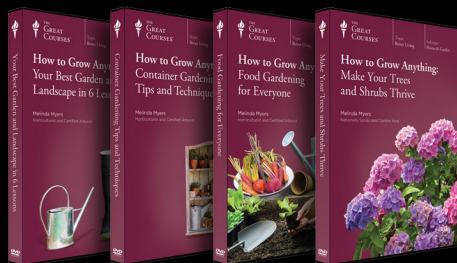
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