



Powdery Mildew

by Ron Clark

Last year we had a very wet spring with much rain through June. As a consequence powdery mildew formed in abundance on our squash and cucumbers. Although powdery mildew seldom kills the plant, it can affect the plant's vitality, the taste of their fruit, and reduce their yield. Since we had more squash plants than we needed, we did nothing last year about the powdery mildew.

This year I decided to investigate what options were available to prevent powdery mildew and, if possible, try to get ahead of it.

What is Powdery Mildew

Powdery mildew is a fungal disease that affects a wide range of plants. Powdery mildew is one of the easier diseases to spot, as its symptoms are quite distinctive.

Infected plants display white powder-like spots on the leaves and stems. The lower leaves are the most affected, but the mildew can appear on any part of the plant that shows above the ground. As the disease progresses, the spots get larger and thicker as massive numbers of spores form, and the mildew spreads up and down the length of the plant. Later in the season, small black pepper-like structures may appear within the white powdery material. Leaves infected with powdery mildew may gradually turn completely yellow, die, and fall off, which may expose fruit to sunburn.



Powdery Mildew of Cucurbits - Wikipedia

Powdery mildew does not require water to establish and grow. Infection can actually occur on dry leaves. In fact, spores of some powdery mildew fungi are killed and germination is inhibited by water on plant surfaces for extended periods. In the absence of rain, temperatures between 75-85° F and elevated levels of relative humidity (80-95%) promote the development of powdery mildew. Shady conditions favor growth of powdery mildew. Extreme heat (above 90°F) and direct sunlight suppress the development of powdery mildew.

Life Cycle

Powdery mildews produce *mycelium* (fungal threads) that grow only on the surface of the plant. The fungi feed by sending *haustoria*, or root-like structures, into the epidermal (top) cells of the plant. The fungi overwinter on plant debris as *cleistothecia* or *mycelium*. In the spring, the *cleistothecia* produce spores that are moved to susceptible host tissue by splashing raindrops, wind or insects. Spores, which are the primary means of dispersal, make up the bulk of the white, powdery growth visible on the plant's surface and are produced in chains that can be seen with a hand lens. Powdery mildew spores are carried by wind to new hosts.

IOGA MISSION:

To educate ourselves and others in reasons for and methods of environmentally friendly gardening; and to encourage the reduction of chemical dependency in gardens, lawns and farms.

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Cultural Controls

1. Select powdery mildew-resistant varieties when available.
2. Do not crowd plants. Air flow and ventilation will discourage mildew growth. Prune overcrowded plant material to help increase air circulation. (Disinfect your pruning tool in a bleach solution of one part household bleach to four parts water after each cut.)
3. Don't over water. Also, water plants in the morning to give the plants the rest of the day to dry off.
4. Place plants where they will receive morning sunshine and dry out more quickly, if possible.
5. Don't over fertilize. High nitrogen promotes tender leaf formation, causing dense stands that are more susceptible to infections.
6. Remove and destroy severely infected plants, if possible.
7. In the fall, remove as much of the plant and its debris and destroy. **Do not compost infected plant debris.** (Temperatures are often not hot enough to kill the fungus.)

Find it early. Most organically approved fungicides (as well as conventional fungicides) work by preventing infection of healthy tissue, so starting treatment early is key to their effectiveness.

You need to start looking at the oldest cucurbit plantings once a week as soon as the first fruit start to enlarge. Examine leaves by looking closely at the top and underside of old crown. The first signs of the disease are typically seen on shaded lower leaves, on the leaf undersides.

What to spray. There are several materials discussed below that can be used by organic gardeners to control powdery mildew.

Sulfur

Sulfur products have been used to manage powdery mildew for centuries. Sulfur disrupts the metabolic process of fungi and insect pests. It is found in nature as a yellow powder crystal. It has a low toxicity to humans. It can be purchased as sulfur dust, wettable sulfur, and colloidal sulfur.

The best sulfur products to use for powdery mildew control in gardens are wettable sulfurs that are specially formulated with surfactants similar to those in dishwashing detergent. Sulfur dust, is more difficult to use, irritating to skin and eyes, and limited in terms of the plants they can safely be used on.

Dr. Meg McGrath at Cornell's Long Island Horticultural Research and Extension Center showed that sulfur and 'stylet' oil are the most effective materials for managing powdery mildew

University of California indicated that sulfur is highly effective against powdery mildew if used in a protectant program with a minimum of 7 to 14 days between applications.

According to University of Florida, sulfur only provides a moderate level of control in squash, and this lack of control has been confirmed by extension personnel.

Cautions Using Sulfur:

1. **Avoid using horticulture oils for at least one month after using sulfur or vice versa.**
2. Shake sprayer or sprinkler while in the process of application to prevent the sulfur from settling.
3. Use plastic containers as sulfur corrodes metals.
4. **Sulfur can be damaging to some squash and melon varieties** (mostly muskmelons and honeydews). Before treating your plants, test the spray on a few leaves to make sure they are not too sensitive. And, do not apply sulfur when air temperature is near or over 90°F

Gardens Alive has a 16oz Sulfur Guard™ Fungicide concentrate for \$8.95.

Copper

Fixed copper is one of the oldest fungicide and bactericides used to control a wide range of plant diseases. There are many copper compounds that are used as fungicides. The most common is *Bordeaux mix* which is a combination of copper sulphate and hydrated lime. It is accepted in organic farming provided that the number of applications is strictly followed and a proper soil amendment is observed to prevent copper accumulation in the soil.

Bordeaux mix spray

Materials needed to make a gallon mixture

- 3 ½ tbsp of copper sulphate
- 10 tbsp of hydrated lime
- 1 gallon of water (4 liters of water)

How to prepare?

- Add copper sulphate and hydrated lime in water.
- Make sure to use plastic container.
- Stir well using a wooden sick or ladle.
- Protect self from direct contact with the solution

How to use?

- Spray plants thoroughly preferably early in the morning, in a dry and sunny day. In this way, the plants have the time to dry and the solution cannot penetrate into the leaves' tissues
- Constantly shake the sprayer while in the process of application to prevent the solution from clogging

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Gardens Alive has a *Soap-Shield Flowable Liquid Copper Fungicide* which controls a wide range of plant diseases such as powdery mildew, rusts, blackspot, leaf and fruit spot, downy mildew, fruit rot and late blight.

Cautions for Copper:

1. Fungicides based on copper salts are to some extent less damaging than sulfur, but they are harmful.

University of Florida recommends that copper hydroxide and copper sulfate be used as a fungicide to control powdery mildew in cucurbits (Zitter et al. 1996).

University of California indicated that copper was not very effective in controlling powdery mildew

Baking Soda (sodium bi-carbonate; also potassium bi-carbonate)

An alternative nontoxic control for mildew is baking soda combined with horticultural oil or soap. Baking soda increases the surface pH of the leaf making it unsuitable for the growth of powdery mildew spores. Researchers at the University of Rhode Island have confirmed that a combination of 1 tablespoon baking soda plus 2.5 tablespoons oil in 1 gallon of water is effective against powdery mildew on roses. Use of this combination on other crops is still experimental.

University of Wisconsin says to spray approximately once a week with a solution of baking soda (1.5 tablespoon/gallon) and horticultural oil (3 tablespoons/gallon). Other recipes:

2 gallons warm water	1 teaspoon baking soda
3 tbsl murphy oil soap	1 quart water
1/2 cup baking soda	A few drops of liquid soap

GreenCure is a potassium bicarbonate-based fungicide used to control powdery mildew, black spot and other common plant diseases available at Worm's Way

Cautions for Baking Soda

1. Before treating your plants, test the spray on a few leaves to make sure they are not too sensitive.

Milk

Wagner Bettiol, a scientist from Brazil, found that weekly sprays of milk controlled powdery mildew in zucchini just as effectively as synthetic fungicides. Not only was milk found to be effective at controlling the disease, it also acted as a foliar fertilizer, boosting the plant's immune system.

In his experiments with zucchini plants, Bettiol found that a weekly spray of milk at a concentration of at 10% (1 part milk to 9 parts water) significantly reduced

the severity of powdery mildew infection on the plants by 90%. (Do not use a concentration more than 30%). Skim milk works just as well as whole milk.

It seems that milk is a natural germicide. In addition, it contains several naturally occurring salts and amino acids that are taken up by the plant. It is possible that milk boosts the plant's immune system to prevent the disease.

Neem Oil

Neem oil is a botanical fungicide derived from the seeds of the neem tree (*Azadirachta indica*) which grows in India and Africa. Besides being a fungicide, Neem oil is an insecticide, miticide, and an antifeedant. Neem oil controls black spot, powdery mildew, anthracnose and rust (fungus). Neem oil repels a wide variety of pests including the mealy bug, beet armyworm, aphids, the cabbage worm, nematodes and the **Japanese beetle**. Neem Concentrate will also control all mite adults and eggs; residual benefits are from 7-21 days

Neem oil makes the plants it touches taste bitter, so pests won't eat them. Azadirachtin, the main active ingredient in Neem oil, also interrupts insects' transitions between different stages of metamorphosis, such as growing from larvae to pupae. It prevents insects from developing a hardened exoskeleton

Neem should be safe for beneficial insects since only insects that munch on plants should be affected.

Neem oil comes either full strength which must be combined with soap before using or as 70% Neem oil. A pint of 70% Neem oil makes 16 gal. of spray. Worm's Way has a pint of 70% Neem oil for \$20. Lowes locally has a pint of 70% Neem oil (*Green Light Neem Concentrate*) for \$12, Morgan County Seeds has a pint of 70% Neem oil (*BONIDE® Rose Rx 3-in-1 Spray*) for \$8.15.

Caution for Neem Oil

1. Before treating your plants, test the spray on a few leaves to make sure they are not too sensitive.
2. Neem oil should not be consumed by pregnant women, women trying to conceive, or children.

Biological Fungicides

The previously discussed fungicides are used as preventive measures. Biological fungicides (such as *Serenade*) are commercially available beneficial microorganisms formulated into a product that, when sprayed on the plant, actually destroys fungal pathogens. The active ingredient in *Serenade* is a bacterium, *Bacillus subtilis*, that helps prevent the powdery mildew from infecting the plant.

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University of California indicates that this product functions to kill the powdery mildew organism and is nontoxic to people, pets, and beneficial insects. It has not however been proven to be as effective as the oils or sulfur in controlling this disease.

University of Florida says a problem with many biological control agents is that they require higher humidity for survival than do the powdery mildews. Consequently, biological fungicides are not as effective at controlling powdery mildew as other fungicides

Serenade Garden Disease Control is available from Worm's Way in a 32 oz concentrate for \$20,50 (makes 8 Gal.).

Other

Some other organic fungicides mentioned are the following: chamomile tea, garlic spray, ginger powder extract, papaya extract, turmeric extract, and compost tea. Garlic naturally contains high levels of sulfur and a few cloves crushed in water can be used to make a homemade spray.

Personal Experimentation

Personally, I will be using Neem oil this year on my squash and cucumber plants as a preventative measure against Powdery Mildew. I am hoping that the Neem oil will also have some effect on the Squash Bug and possibly the Squash Vine Borer. I'll let you know.

I will also try Neem oil on my small Bass Wood trees to see if it has an effect on Japanese beetles.

Let me know if anyone has had success or not using any of the organic fungicides discussed here.

"Powdery Mildew of Cucurbits in Florida," University of Florida Publication #HS1067

"Powdery Mildew on Vegetables," University of California Pest Notes Publication 7406, November, 2008.

"Powdery Mildew," University of Rhode Island GreenShare Factsheets

"Powdery Mildews," Colorado State University Extension, Gardening Series No. 2.902, October, 1999.

"Powdery Mildew Management on Organic Cucurbits," University of Vermont Extension, July, 2005.

"Got Powdery Mildew? Get Milk!" *Arzeena Hamir*, www.thefrugallife.com/mildew.html

"Powdery Mildew," *Brian Hudelson and Susan Mahr*, University of Wisconsin - Madison

April IOGA Meeting

The annual IOGA plant auction on April 18th was interesting as usual and lots of fun! After a great pitch-in lunch at the Zionsville Library, Ann Leatherman opened the Q&A session and then had a short business meeting. One of the questions dealt with the use of Neem oil - a tropical tree oil that is useful as a fungicide and herbicide. Ann Leatherman reported that it had been decided at a board meeting to invest \$500 to reconstruct the IOGA website. This will be done prior to the July meeting, and Lynn Jenkins has taken on the leadership of this project.

Ron Clark, assisted by Claudia Clark, was the auctioneer for the plant auction. The auction included a large number and variety of interesting plants, including vegetables, woodland and prairie plants, perennials, trees, and a few tadpoles (thanks to Rosie Bishop!). There were many interesting comments and many good deals for all! A few non-members joined the auction. The proceeds for the auction were \$208.25.

Visit IOGA's Upgraded Website

(As of press time, the new website was not up, but should be soon)
The IOGA website, gardeningnaturally.org, has a new look and functionality. Check out our upgraded website now.

For some time we have had difficulty in readily updating the content on our website. The primary purpose for the upgrade was to make it easy for ordinary lay persons to update pertinent content on the site and not need a professional web developer for that purpose.

Tomato Hornworms

Tomato hornworms are huge, bright green worms who eat their way through the tomato patch, leaving a trail of eaten leaves and black droppings. Often they are covered with white eggs of the parasitic wasp. You can just leave the worms alone and the emerging wasps will take care of the worms for you (unless you have kids around who delight in squashing the huge worms!)



Colorado State University (W. W. Morgan)

Parasitic Wasp Cocoons on a Tomato Hornworm

Flower & Patio Show and Earth Day Indiana Festival

IOGA volunteers worked hard to fulfill our mission of educating others about environmentally friendly gardening and reducing the use of chemicals on gardens and lawns. Volunteers were successful both at the Flower & Patio Show and at the Earth Day Indiana Festival. Many good conversations were exchanged and earnest seekers enjoyed "talking dirty" (about soil building and mulch) and being "bugged," with our focus on beneficial insects.

Flower & Patio Show

This year's Flower and Patio Show was successful in spite of some initial surprises. With more emphasis on outdoor presenters, the show changed so that we were not with our usual nonprofit group, the *Natural Gardening Network*. Our location was spacious and was visited with interest.



Comments written on a pad included the following:

- “Would love more information”
- “Love your booth. First real gardening display that I have seen here.”
- “Nice Display!”
- “More info please”
- “Want to know more”

Volunteers at the Flower & Patio Show included Rosie Oaks, Rosie Bishop, Maria Smietana, Marilyn Spurgeon, and Ann Leatherman. E-mail responses were sent to 80 people who had requested information or had left questions

Earth Day Indiana Festival

The attendance at the festival was great and our booth received many visitors. We ran out of literature on beneficial insects and on composting and took requests for information. E-mail responses were sent to 25 people who had requested information or had left questions



Children enjoyed hearing about bullfrog tadpoles and beneficial insects from Rosie Bishop

Earth Day Volunteers included Paul Gaston, Rosie Bishop, Ann Leatherman, and Ron Clark.



Ann Leatherman (above) and Paul Gaston (below) answered organic gardening questions and talked about compost at the Earth Day Indiana Festival



At the Earth Day Indiana Festival Rosie Bishop, “talking dirty” (about soil building) and beneficial insects, uses her bullfrog tadpoles to lure prospective future organic gardeners

Northern Nut Growers

100th Annual Meeting

July, 2009

The 100th annual meeting of the Northern Nut Growers Association (NNGA) will be held July 19-23 at Purdue University in West Lafayette, Indiana.



The keynote speaker will be Dr. Jules Janick, Department of Horticulture and Landscape Architecture, who will be speaking on the "History of World Horticulture—Nuts, Fruits, and Art."

The five day event includes tours of 1) the University fruit and nut research plots, 2) an apple orchard with an expert where there are 800 varieties of apples near Zionsville, Indiana, 3) a pecan, shag and shellbark hickory variety test orchard in Indianapolis (at the home of IOGA member, Marilyn Spurgeon), and 4) persimmon and pawpaw plants and test orchards in Terre Haute, Indiana.

For registration information, contact Jerry Lehman at jwlehman@aol.com or by phone at 812-298-8733. More information is on the Northern Nut Growers websites: www.northernnutgrowers.org

Living Lightly Fair 2009



September 19,
8 a.m. to 3 p.m.
Minnetrista
Campus, Muncie,
Indiana

Living Lightly is a FREE resource fair for sustainable lifestyles. *Living Lightly* is aimed at educating East Central Indiana residents about practical ways to live more sustainably, saving money and resources for themselves and future generations.

Admission is free, and parking is available at the Delaware County Fairgrounds, next door to the Minnetrista campus, 1200 N. Minnetrista Parkway, Muncie, Indiana. Visit www.livinglightlyfair.org for more information!

Biological Mosquito Control

Last year I noticed several small creatures swimming around in our bird bath fountain. I realized that they must be mosquito larva. I know that I am supposed to change the water in the fountain once a week to prevent mosquitoes – but I am basically lazy.

I set out to see if there was some non pesticide product that would kill mosquitoes, but not harm the local birds and an occasional raccoon that take a bath or drink from the fountain. What I found was a product called



Mosquito Bits. *Mosquito Bits* is a biological mosquito control agent that can be placed in bird baths, ponds, flower pots or anywhere that water accumulates and mosquitoes may lay eggs.. Its active ingredient, *Bacillus thuringiensis* subspecies *israelenses* (*Bti*) kills mosquito and black fly larvae for 30 days or more. This bacteria will not hurt pets, birds, fish or wildlife. A 2lb 4oz container of *Mosquito Bits* treats up to 900 square feet of surface water.

A related product, *Mosquito Dunks*, is used for larger ponds. *Mosquito Dunks* float on the water's surface and will keep on working for 30 days or longer. Each dunk treats up to 100 square feet of water surface

Microbe-Lift Liquid Biological Mosquito Control, a liquid version of *Bti*, is also available. A 2 ounce bottle will treat a 250 gallon pond for 22 months

IOGA to Meet at *Seldom Seen Farm* this Fall

IOGA is planning to meet at the *Seldom Seen Farm* for their Fall meeting, October 17.

Seldom Seen Farm is owned and operated by John Ferree and Kelly Funk. They are located northeast of Danville, Indiana. *Seldom Seen Farm* occupies about 15 acres of ground on a 160 acre farm that has been in John's family for some time.

Seldom Seen Farm sells their produce at the Broad Ripple and the Traders Point Creamery Farmers Markets plus directly through a Community Supported Agriculture (CSA).

Details of the meeting will appear in the October issue of the Hoosier Organic Gardener and will be on the IOGA website, gardeningnaturally.org.

Ask us...!

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UPCOMING MEETINGS

Mark your calendar

IOGA generally meets quarterly on the third Saturday of the month. Mark your calendar for upcoming meetings.

October 17, 2009
January 16, 2010
April 17, 2010
(Plant Auction)
July 17, 2010



New IOGA Members

Ted Clark, Indianapolis, IN 46226
Suzie Wallach, Indianapolis, IN 46256
Susan Fordyce, Indianapolis, IN 46278
Kathy Jordan, Carmel, IN 46033
Brian Cooper, Indianapolis, IN 46236
Shirley Vargas, Indianapolis, IN 46220
Jackie Haines, Indianapolis, IN 46250
Robert & Mary Ann Layman, Greenwood, IN 46142

Treasurer's Report 2nd Quarter 2009

Opening Balance April 1, 2009 **\$1379.07**

Income

Membership Dues	\$124.00
Plant Auction	\$208.25
Return Room Deposit	\$100.00
Total	\$432.25

Expenses

Newsletter	\$ 28.80
Website Domain Registration	\$ 49.95
Business Entity Report	\$ 7.14
Misc. Expense (Stamps)	\$ 23.60
July Meeting Shelter Rental	\$ 32.10
Total	\$141.59

Closing Balance June 30, 2009 **\$1669.73**

Respectfully submitted by Ron Clark, Treasurer

How do I join IOGA?

Dues are \$10.00 per individual member, and \$12.00 for a dual membership (same address, one newsletter).

To join, please send your annual dues to:

IOGA
7282 E 550 S
Whitestown, IN 46075

Please include ALL of the following information:

Full Name
2nd Name (if dual membership)
Address
Phone Number
Email Address

AS I DIG IT

by Rosie Bishop

OBSERVATION, PEOPLE, AND DIRTY BOOKS--

Three major tips set me on a fertile gardening path: 1. Observe, 2. Chat, 3. Books

I love to pick the brains of others about gardening practices I observe. When I began degrassing I embarked on a systematic observation of non-grass areas in the neighborhood. (That led to people sharing plants, too, my Garden Angels. Alas! Many were invasives with which I still cope--ivy, vinca minor, euonymus, etc.)

I wish I could remember who suggested that a major investment in a book would be like a solid foundation for a building--Rodale's **ENCYCLOPEDIA OF ORGANIC GARDENING** was worth its pricey weight. And "take it right out to the garden with you, don't worry that it might get dirty" was good advice. I also invested in and often share Rodale's **ILLUSTRATED ENCYCLOPEDIAS** of **HERBS** and of **PERENNIALS**. Perhaps the web which I use often would preclude this today but I still refer to the books. **MRS. GREENTHUMBS** by Cassandra Danz is a zany, entertaining book full of valuable information.

TOOLS--A little belted holster with table knife for digging, small clippers, a cutter, plant labels and grease pencil was another good investment. I WISH I had known earlier about the lifetime guarantee that accompanies (used to) Sears Craftsman tools, especially garden hoses which I used often when starting this yarden project but not much in recent years. Cheap hoses were a waste. The system of snap-together connections served me well back then with a 200 foot lot. I use rain water delivered by upper body lifting as of now, only rarely a hose. About table knives: I work with kids a lot and teach them to dig with my fine collection of serrated knives and tablespoons from the thrift store, usually shallow rooted plants, wild onion weeds or small seedlings. I keep sturdy plastic trowels at various outdoor locations for ready weeding while I chat with neighbors.

SOIL, MULCH and COMPOST--Most vital to any garden is the soil, rich with unseen microbes and shy earthworms working magic in plant waste and sediment. I try to keep every bit of organic matter from this area in this area, but the truth is that currently I



don't compost weed seeds, weed plants such as honeysuckle, Japanese knotweed and Canadian thistle of which I have many in this mature garden-yard. When I used horse manure and could locate all the horse piles in this region so was sure the pile heated. I did. Nor do I compost aggressive seeders, but I collect neighbor leaves along with our own and compost every scrap of plant waste from the kitchen. I add the water to the compost pail, too. My kitchen system is a basket into which fit 3-4 nesting compost pails from ice cream with decorated lid. When I don't feel like taking the stuff outdoors I can ditch a pail out to the porch or garage and use the next one. Our compost pile is way back but I often dig in the stuff wherever I wish-- between rows or into open spots or trenches where the next season's plants will go. Digging in seems important in this urban setting and is good exercise, so I keep a garden fork at the compost pile in all seasons. Bags of leaves from neighbors can also become mini-compost piles in winter. I sometimes use a trash can with bag inserted and mix in the vegetable matter with a stick or trowel. Wood mulch from our tree trimmings is used for paths and among perennials; I sometimes add compost or blood meal (alas, a dubious animal product) but I really see no problem that some people imagine with tree mulch pulling away nitrogen. To avoid "mulch monsters" I ask that the tree trimmers have a sharp blade or I check the chips if I seek neighbor trimmings. A permanent "mulch mountain" is a fun place for kids and a handy resource--a place where shy centipedes can be routed out and climbing is fun. Keeping kid-sized pails and shovels can yield some helpful labor, too.

NEWSPAPER--Good for mulching or weed barrier, I often place between rows with a think cover of wood mulch. I used thick layers of newspaper or corrugated cardboard sheets when converting grass to feed the Earth for more desirable plants. Sometimes I find good news, too.

SEEDLINGS AND TRANSPLANTS--I use a warming mat and workshop light for starting seeds indoors. Hardening off under the picnic table usually provides enough protection from wind and just enough sunlight to help the babies to adapt. Check the weather and choose a still, cloudy day before planting in the garden; WIND can be a real spoiler.

SMALL IS DELICIOUS--I think that the game of attaining the largest tomato or radish can lead to foolish use of chemical fertilizers that is worse than waste. Does your Earth Suit come equipped with an Advertiser Rejector?

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TOO NEAT or SOMEWHAT MESSY--

BENEFICIAL INSECTS Tall grasses and myriad other plants remain for winter interest and provide for overwintering of beneficial insects or their eggs. The well-advertised neatness in which shrubs mimic boxes and poison-perfect grass a badge of pride requires **STRONG** ad resistance. Trimming hedges can destroy praying mantis egg cases and ladybug nest places. I mark the locations of mantis cases for kid observations with bright orange ties. If you don't love insects and their quiet protections, I suggest **GOOD BUGS FOR YOUR GARDEN** by Starcher. Remember, to attract the beneficial we need to tolerate some plant-munchers to feed them.

COMPANION PLANTINGS--useful when I can; I lean heavily on interplantings of marigolds and zinnias which yield abundant seeds for next season. I experiment with interplanting herbs.

ICE and MUSCLES--It never fails, I will have some days in which I "overdo." I can't exaggerate the value of ice on "mature" muscles and on strained wrists from dipping rain water. I sometimes ice when I have worked hard, as prevention. Learning to pace oneself, work hard then stop and contemplate the wonders of it all, than go for it again--great wisdom! BUT, here's some advice for the less motivated:

*To cultivate a garden takes too much time and labor
I'd rather live next door to one and cultivate my neighbor.*

Another Cool Tool

In the April newsletter, Paula Boone recommended the double-bladed, diamond shape hoe made by DeWitt company of the Netherlands. The editors purchased one and agree that with Paula that it is great.

We also purchased a DeWitt "Cape Cod" Weeder shown to the right. Claudia dearly loves this tool for hand weeding among closely spaced plants. This tool comes in both right-handed and a left-handed versions and like the diamond shape hoe is made of hardened steel that keeps the blade sharp This tool can be purchased from Earth Tools, Inc.

www.earthtoolsbcs.com for \$21.

If anyone else has a "cool tool", either new or antique, they would like to share, send the editors a description and photo.



"Cape Cod" Weeder (RH)

Directions to the Yellowwood State Forest Picnic Shelter for the July IOGA Meeting

From Bloomington: Take SR 46 east through Bloomington. From the junction of SR 46 and SR 446, go 9.1 miles east on SR 46 to the Yellowwood State Forest sign and turn left (north) on Yellowwood Road.

OR

From Nashville: Take SR 46 west through Nashville. From the junction of SR 46 and SR 135, go 5.7 miles west on SR 46 to the Yellowwood State Forest sign and turn right (north) on Yellowwood Road.

On Yellowwood Road go 1.1 miles and turn left immediately after a small bridge. You are still on Yellowwood Road. Continue for another 0.8 miles and the turn right onto a gravel road. Follow the sign to office & campground. Go 0.4 miles and turn left at the sign to the picnic shelter & camp store. The picnic shelter is straight ahead about 0.1 miles. Park by camp store.

Directions to the Meadowlark Organic Farm for the July IOGA Meeting (if Not Going to the Yellowwood State Forest First)

From Bloomington: Take SR 46 east through Bloomington. From the junction of SR 46 and SR 446, go 7.3 miles east on SR 46. Turn right (south) on Steele Road.

OR

From Nashville: Take SR 46 west through Nashville. From the junction of SR 46 and SR 135, go 7.5 miles west on SR 46. . Turn left (south) on Steele Road.

Go south on Steel Road for 0.35 miles and turn right (west) onto Kent Road. Go 0.4 miles to the Meadowlark Organic Farm on the south side at 6181 Kent Road.

(Editor's Note: You may wish to stop by Worm's Way to or from the IOGA meeting to pick up organic gardening products. Worm's Way is north of Bloomington on SR 37 just south of Oliver Winery. And, come to think of it, perhaps you might also like to stop at Olivery Winery for some wine tasting)

**IOGA
Meeting
Sat. July 18
11:30 am**

**Meadowlark Organic Farm
6181 Kent Rd., Bloomington, IN 47401
(Business meeting, Q&A, and pitch-in lunch
at Yellowwood State Forest before tour)**

- 11:30 Arrive at the Yellowwood State Forest Picnic Shelter
- 11:30—12:00 Introductions & Gardening Q&A
- 12:00—12:15 Business Meeting
- 12:15— 1:15 Great Pitch-in Lunch
(bring food to share plus table service)
- 1:30— 2:00 Caravan 7.6 miles to Meadowlark Organic Farm
- 2:00 Tour begins

Meadowlark Organic Farm and Yellowwood State Forest are located in the rolling hills of western Brown County just off of SR 46. Marcia Veldman of Meadowlark Organic Farm cultivates an acre of land just south of SR 46 on a gently sloping hillside surrounded by pasture and woodland. Yellowwood State Forest picnic shelter is north of SR 46.

For the pitch-in lunch, bring a favorite dish filled with food to share and your plate, fork, and drink.

Yellowwood State Forest is located 9 miles east of SR 446 in Bloomington north off SR 46, or 7 miles west of SR 135 in Nashville (Follow signs from SR 46). Yellowwood State Forest address is 772 South Yellowwood Rd., Nashville, IN 47448. (See page 9 for detailed directions to the picnic shelter/Meadowlark farm.)

Everyone welcome! Questions, call Paula Boone 317-758-4789 or cell phone (if lost) 317-453-9773. Remember to car pool, if possible.

Join us and bring a friend!

Hoosier Organic Gardener
Claudia and Ron Clark, editors
7282 E 550 S
Whitestown, IN 46075



**Join us!
IOGA Meeting
Sat. July 18**