

# Green Thumb Prints

Newsletter of the Hancock County  
Master Gardener Volunteers



March 2010

*Gardening is our Passion  
Education is our Purpose*



## WHAT'S INSIDE THIS ISSUE:

- **Vexing Bugs**—by Larry Schock
- **Growing a Fruit Crop**
- **Heat Factor of Peppers**
- ***Baptisia australis***
- **Stevia, Bulbs, More**

## *Dates to Remember!*

- | **Thursday, March 11:** Brown Bag Presentation, 6 pm, Extension Office. MGV Monthly Meeting follows at 7:00 p.m.
- | **Saturday, March 13:** March Gardening with Pat Flinn at Oakwoods Nature Preserve 10-11 am
- | **Wednesday, March 17:** WFIN Phone Club, 9:00—11:00. Cathy Z & Ruth
- | **Saturday, March 20:** Art of Gardening, Lima.
- | **Fri. - Sun. 3/26 - 28:** Leisure Living Show. Cathy Z has all slots filled. Booth location TBD
- | **Thursday, March 25:** Rain Garden Workshop, Ag Center, 6 pm Pre-registration required. Call Soil & Water Office: 419-422-6569

## Upcoming Events

- | **Thursday, April 8:** MGV Recognition Banquet
- | **April 10:** Spring into Gardening, Putnam Co. MGVs, Miller City.

## *Coordinator's Corner*

—By Nancy Kronberg

Master Gardener Volunteer training classes have been postponed until fall. We will determine dates asap so that I can let all the applicants know. I heard from most of them that they are interested in the fall session if it fits their schedule.

Thanks to everyone for your thoughts and prayers while my mother is recovering from a fall. She is in a Grand Rapids, MI rehab center and doing very well. I will be travelling back and forth for visits and assistance over the next few weeks. I will continue to fit MGV duties in between. It's good I am relatively good at multitasking! Now if I could just remember everything that needs to be done!

As I get e-mails for project requests, I will be passing them on to the committee chairperson in charge. I am still available for guidance, but need to coordinate more instead of taking charge. Besides, all committee chairs are well qualified and can do a great job.

Sign up sheets for various projects will be available at the March 11th meeting. Workstation, Demo Garden Plots, and Let's Go Gardening are a few that come to mind.

Hope to lots of you at the meeting. In case of inclement weather, I will again e-mail MGVs to make phone calls. That worked very well in February.

Until then,  
Nancy



# The Vexing Bugs in the Global Trading System

By Larry Schock

As more goods are imported from overseas, greater numbers of invasive insects and plants also arrive and bite business. This is a summarization of an article in the *Wall Street Journal* (Friday, January 15, 2010 issue).

As the global economy expands and countries ship more of their products from one location to another, more and more destructive bugs and plants are shipped along with the merchandise. Annually, about 30 new invasive insects are discovered in the US, up sharply over the last decade as indicated by the USDA. The economic impact of invasive species in the US is estimated at approximately \$134 billion, annually.

Example of bugs that have been imported include the hemlock woolly adelgid, which can take out a 200 to 300 year old tree in as little as two to four years. The Adelgid is thought to have first arrived in Richmond, VA in the 1950's on nursery plants from Japan. They have destroyed an estimated 95% of the hemlocks in Virginia's Shenandoah National Park. Forest products is second only to the coal industry in WV, contributing about \$4 billion to the state's economy through taxes, revenue and roughly 30,000 jobs.

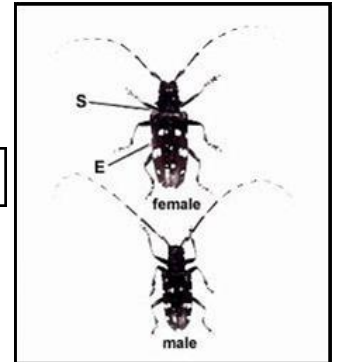


“Wool” associated with hemlock woolly adelgid  
University of Rhode Island

In some cases the plant or bug is introduced to control other bugs. The English sparrow was brought over to control the canker worm on crops in 1853, but by 1900, it was considered a pest because it introduced diseases. The Asian purple loosestrife, was introduced as an ornamental plant in the early 19<sup>th</sup> century and now invades some 284,000 acres per year in the US, crowding out native plant species that help support duck, geese and muskrat.

More recently, invasive species can be directly traced to increased trade. The Asian long horned beetle hitched a ride on shipping pallets to Brooklyn, NY from China. In the northeast, this long-horned beetle has killed thousands

Asian Longhorned Beetle



of maple trees and other species. Others like the zebra mussel have arrived in the Great Lakes in the ballast water of ships from Europe, having spread there from Russia.

The emerald ash borer, a shiny green beetle from Asia believed to arrive on packing material, is attacking ash trees.

The US has also exported some unwelcome organisms. The gray squirrel, native to the eastern US, is causing havoc in Britain and Italy, where it is larger and more aggressive than the red squirrels it is displacing.

There are US laws to prevent the import of invasive species, but they haven't been significantly revised since 1918. Last year, the USDA proposed new regulations that would ban imports of certain plants pending analysis ensuring they wouldn't host pests.

Experts indicate they can only prevent the death of select trees. Each of the hundreds of thousands of infested trees must be treated individually, with an insecticide that can be injected into the soil, into the tree or sprayed on the trunk. Several groups also are experimenting with releasing predator beetles.

Asian purple loosestrife  
www.fws.gov



# What should you consider when deciding to grow a fruit crop in your home landscape?



*Prunus persica* - Peach

Gardeners who are considering growing fruit crops in the backyard should do their research and plan well before installing fruit gardens. The site should be assessed to determine if it can support fruit crops, and if there is space; strawberries, brambles, and blueberries will require less space than grapes and tree fruits. The gardener should also determine if he has the patience, time, and willingness to manage the crops and associated pests.

As a group, fruiting plants require rather exact site conditions and proper cultural management if they are to be productive. Ideally, fruit crops are planted in a full sun location and in soil that drains well. Some of the crops require an acidic soil pH, and so some adjustment may be needed for most Ohio soils. The homeowner should start with a soil test to be sure of the native pH and then adjust from there. Fruit crops should also be placed where they won't compete with trees, shrubs, or other vegetation. Weeds must be managed and the site kept free of debris.

In general, if the fruiting crops were ranked as to "degree of difficulty" they would stack up from easiest to most difficult like this: strawberries, brambles (raspberry and blackberry), grapes, blueberries, and tree fruits. In terms of pesticide treatments needed for a crop, from least to greatest, they rank like this; blueberry, raspberry, thornless blackberry, strawber-

ries, some grape cultivars, and tree fruit.

Pollination is critical for fruit set. Some crops are self-fruitful, meaning that a single variety or cultivar can pollinate itself. Strawberries, raspberries, blackberries, blueberries, and grapes are all self-fruitful. Other fruits require cross pollination; pollen from two different varieties or cultivars is needed for pollination and fruit set. Apples, pears, plums, and some of the sweet cherries require cross pollination. Two trees of different varieties should be located within about 100 feet of each other for cross pollination to occur. Of course, there are a few exceptions and the gardener should thoroughly research the particular cultivars selected to determine pollination needs.

Fruit crops can be attacked by numerous diseases and insect and mite pests. The gardener should become aware of the likely pests that might be encountered in a season. It's a good idea to select varieties or cultivars that are resistant to disease problems, when possible. For example, 'Liberty' is an apple cultivar that was developed in a breeding program at the New York State Agriculture Experiment Station in 1978. It is rated as highly resistant to apple scab, has moderate resistance to powdery mildew, and is resistant to cedar apple rust and fireblight. 'Freedom' is another cultivar introduced in 1985 that has high resistant ratings.

If you would like to keep pesticide applications to a minimum with fruit crops, search out cultivars that are rated like these.

Source: Webgarden

## Plant facts — Dusty Miller

**Last summer, I was just about to plant some dusty miller in my flower garden when a friend told me dusty miller puts out a chemical that prevents other plants from growing near it. Is this true?**

Your friend may be thinking of wormwood, a related artemisia, that does put out a growth-inhibiting toxin. Dusty Miller has no such properties, and is safe to use around other plants.

# Roses have hips too!

Source: Cindy Haynes, Department of Horticulture, Iowa State University Extension

A part of the rose plant that is often overlooked is the fruit or hips. While we try to avoid big hips on our bodies, big hips on a rose can be incredibly attractive. Rose hips mature in late summer or early fall and can be burgundy, scarlet-red, orange, or golden-yellow.



In addition to being ornamental, rose hips attract wildlife to the garden. Many birds and small animals will consume hips during the fall and into winter. Rose hips are edible for people too. They tend to be high in Vitamin C and are can be made into jams or jellies (with an equal part of sugar since they are quite tart). Rose hips are also sometimes dried and incorporated into teas. In fact, during World War II when Great Britain found it difficult to import citrus, a syrup was made from rose hips and used as an excellent substitute source of Vitamin C.

The tastiest rose hips come from shrub roses and old garden roses, which produce only one flush of bloom during the growing season. Deadheading (removal of spent flowers) is not necessary. In contrast, modern roses (hybrid tea, floribunda, and grandiflora cultivars) are repeat blooming and must be deadheaded to encourage continuous bloom. The hips on most modern roses are not as large or showy as those on shrub and old garden roses. Attractive, tasty hips are produced by many of the rugosa roses (*Rosa rugosa*) such as 'Alba', 'Frau Dagmar Hastrup', and 'Scabrosa', the sweetbrier rose (*Rosa rubrifolia*), and many other shrub and old garden roses. Other cultivars noted for attractive hips include, 'Adelaide Hoodless', 'Champlain', 'Henry Kelsey', 'Jens Munk', and 'Morden Centennial'.

Consider adding shrub or old garden roses with ornamental (and edible) hips to your garden this spring. Maybe you can give your spouse a gift certificate for one of these shrub roses. Just be careful...no jokes about hip size or you might be in for a lonely experience.

## The Miss Mulching of America—

As temperatures rise, so do the piles and layers of mulch in Ohio landscapes. Mulch, at the proper depth of 2-3", can have many benefits including the prevention of weed growth, conservation of moisture in the soil, stabilization of soil temperatures, and the addition of organic matter to the soil. However, too much of a good thing can be bad.

The application of heaping mounds of mulch against the tree trunks is often referred to as "volcano mulching." When mulch is applied in this manner, moisture captured by the mulch can keep the plant's bark in a continued state of wetness. This can cause the bark to decay, and lead to insects, fungi, and bacteria feeding on the damaged tissue. Not a good thing!

You probably won't have to look far to see this miss application of mulch. Let's pull back the mulch and get the word out about how to properly apply mulch. For more information about mulches, refer to OSU FactSheet HYG 1083, Mulching Landscape Plants. Source: BYGL

# HOW HOT IS HOT?

Conceptually, peppers are not hot. We can touch them and they are the same temperature as their environment. However, if we bite into a Habanero hot pepper, we are enlightened to a different experience—the sensors in our mouths tell us that we must have just put something like hot coals into our oral cavities.

**Capsaicin** (pronounced cap-say-ah-sin) is the substance that makes peppers spicy. This is concentrated in the veins of the fruit and this substance stimulates the nerve endings making our brains think that we are in pain. The brain responds by releasing substances called endorphins which are similar in structure to morphine. The result is a mild euphoria, making peppers mildly addictive because of this hot pepper high.

The Scoville scale measures the heat factor (pungency) of a pepper as defined by the amount of capsaicin it contains. The number of Scoville heat units (SHU) indicates the amount of capsaicin present as shown in the following chart.

## Scoville Scale

Scoville rating	Pepper Variety
16,000,000	Pure Capsaicin
8,600,000—9,100,000	Various capsaicinoids
500,000—8,600,000	Law Enforcement Grade pepper spray, Bhut Jolokia (Naga Jolokia)
100,000—500,000	Red Savina Habanero, Scotch Bonnet, Caribbean Red, Gunter, Datil
50,000—100,000	Santake, Thai, Malaqueta, Chiltepin
30,000—50,000	Cayenne, Tabasco, Piquin
15,000—30,000	Serrano, Chile de Arbol
5,000—15,000	Yellow Wax
2,500—5,000	Jalapeno (from 3,500 up to 10,000), Miasol, Guajillo
1,500—2,500	Sandia, Cascabel
1,000—1,500	Ancho (Poblano), Pasilla, Espanola
500—1,000	Anaheim, New Mexico
100—500	Mexi-bells, <a href="#">Cherries</a>
0—100	Mild Bells, Sweet Bananas, Pimento

Note: When peppers are dehydrated, they tend to increase in "heat" by about 10 times

In 1912, American chemist, Wilbur Scoville, developed this test for rating the hotness of peppers, know as the Scoville Organoleptic Test. Using this method, an alcohol extract of the capsaicin oil from a measured amount of dried pepper is added incrementally to a sugar/water solution until the hotness is slightly detectable to a panel of tasters (usually 5). The degree of dilution provides the measurement on the Scoville scale. For example, a sweet pepper or bell pepper, containing no capsaicin at all has a Scoville rating of zero since no heat is detectable. A habanero must be diluted over 200,000 times before the capsaicin is undetectable.

The weaknesses in this testing is that it must rely on human subjectivity and measurement inaccuracies. In addition, there is variation within a species depending upon climate, humidity, seed lineage, soil, etc.. All this should be kept in mind when interpreting the Scoville ratings.

The hottest pepper? New Mexico State University discovered the world's hottest chile pepper: Bhut Jolokia (ghost pepper), a variety originating in Assam, India. The previous champion was the Red Savina. Bhut Jolokia reaches one million SHUs, or twice the heat of the Red Savina Habanero. (Warning: Never, ever touch eyes, nose, or mouth when handling these peppers!) (Sources: Wikipedia and various)

# *Baptisia australis*

## 2010 Perennial Plant of the Year



### Light

Plants thrive in full sun. Plants grown in partial shade may require staking.

### Soil

This North American native is easily grown in well-drained soil and is drought tolerant after establishment.

### Uses

This spring flowering shrub-like perennial may be used to fill the back of the border or in the wild garden.

### Unique Qualities

The combination of flower and leaf color is dramatic in the early blooming season. Flowers are followed by inflated seed pods that are useful for dried flower arrangements.

### Hardiness

USDA zones 3-9.



Blue false indigo, wild indigo, or baptisia are common names for this perennial. This hardy perennial grows 3 to 4 feet tall and 3 to 4 feet wide with an upright habit. *Baptisia australis* is an excellent plant to anchor the back of the border.

About the program:

“The Perennial Plant of the Year” program was initiated in 1990. Each year, members of the Perennial Plant Association select a perennial that is suitable for a wide range of climate types, exhibits low maintenance requirements, and shows multi-seasonal interest. This helps consumers select plants that the perennial industry experts find to be outstanding and easily grown. Gardeners can have great confidence that the “Perennial Plant of the Year” will grow well. The Perennial Plant Association, incorporated in 1984, is a trade association of members in the U.S., Canada, and 10 other countries. The PPA is dedicated to the improvement of the herbaceous perennial plant industry by providing education to enhance the production, promotion, and utilization of perennial plants.



# Lime and the Lawn

*Nearly every homeowner is aware of the importance of applying lime to the home lawn. However, few probably have a complete understanding of why liming can be an important aspect of the home lawn care program, how to determine if liming is needed, and how one should go about applying lime to the lawn.*

## Why Do Home Lawns Need Lime?

Lime is applied to the soil of home lawns to increase the soil pH. Soil pH, a measure of the soil's acidity or alkalinity, can directly influence the vigor and quality of the home lawn. When the pH is below 7.0, the soil is said to be acidic; when above 7.0, it is alkaline. For turfgrasses used in Ohio home lawns, a soil pH between 6.0 and 7.0 (slightly acidic) is ideal. Several factors cause the formation of acidic soil conditions. One primary cause is the leaching of base nutrients such as calcium, magnesium, and potassium from the soil. This occurs more frequently in areas of heavy rainfall or on heavily-irrigated turfs. A second cause is the use of acidifying nitrogen fertilizers. Most of the fertilizers applied to lawns have the potential to cause acidic conditions. However, the extent to which fertilizer application will affect soil pH is dependent on a number of factors, including: type of nitrogen applied, amount applied, types of other nutrients present in the fertilizer, soil type, and irrigation frequency. Other factors which may act to reduce soil pH are decomposition of soil organic matter and irrigation with acidic water.

When the soil pH drops below 6.0, a number of nutrients necessary for proper growth become less available for use by the turfgrass plant. These include the following: nitrogen, phosphorus, potassium, sulfur, calcium, magnesium, and molybdenum. As these nutrients become less available, the lawn's color, vigor, and ability to resist (or recover from) heat, drought, or traffic stress will be reduced. Applications of enough lime to raise the soil pH above 6.0 can increase the availability of these nutrients, thus making it easier to maintain the quality and vigor of the lawn. Note that an excessively high (alkaline) soil pH (greater than 8.0) is just as undesirable as a

low pH. When the pH exceeds 8.0, such nutrients as nitrogen, phosphorus, iron, manganese, boron, copper, and zinc become less available for use by the turfgrass plants in the lawn. The result may be a less vigorous, unhealthy lawn. Over-application of liming products may cause the development of alkaline soil conditions.

## Is Liming Necessary?

The only way to determine whether or not liming is needed, and how much lime to apply, is through the results of a soil test conducted at a state or commercial soil testing laboratory. A soil test kit or pH probe used by the homeowner, or at the local garden center, to test soil pH may indicate the need for liming. However, these simple tests do not allow one to determine how much lime is needed to correct the acidic condition. The reason is that individual soils can differ greatly in the amount of lime required to raise the pH to some specified level between 6.0 and 7.0. This amount of lime for a particular soil is designated as the lime requirement on soil test reports.

## How Much Lime Should Be Applied?

Most soil test reports will indicate the lime requirement in pounds of pure calcium carbonate per acre, or per 1000 square feet. Since most liming products are not likely to be pure calcium carbonate, calculate how much product to apply to the lawn. To do this, find the number on the bag label which is called the **CALCIUM CARBONATE EQUIVALENT** - it will be stated as a percentage. Next, find the liming requirement stated in the soil test report. Using these two numbers, perform the following calculation:

**Liming Requirement (from soil test)**

**Calcium Carbonate Equivalent =**

Amount Of Product/Acre or /1000 Square Feet

If this amount exceeds the values in the table on the next page, the amount recommended for your lawn should be divided in half and applied at two different times during the year.

*(Continued on page 8)*

# Lime and the Lawn—Continued

*(Continued from page 7)*

## How Often Should Lime Be Applied?

Lime should be applied only when soil testing indicates that it is needed. Yearly lime applications, without making a soil test, are strongly discouraged because alkaline (high pH) conditions may develop.

## When Is The Best Time To Apply Lime?

Lime can be applied at any time during the year. However, it should not be applied to turf that is wilted or frost covered. The turf should be irrigated after application in order to wash any lime off of the turfgrass leaves.

## Are All Liming Materials The Same?

As indicated in the table below, all liming materials are not the same. They can differ in price, safety, ease of application, calcium carbonate equivalent, and rate at which they work. Note that gypsum (calcium sulfate) is not included in this table. Gypsum will change soil pH very little, if at all, and should never be considered as a liming material.

### Liming Materials And Their Characteristics

Material	Calcium Carbonate equivalent*	Rate of pH change	Max. recommended rate of application**	Other comments
Burned lime	180	Fast	10	Hazardous, difficult to apply
Dolomitic limestone	70-95	Slow	50	Also a source of magnesium
Ground limestone	70-95	Slow	50	Also a source of magnesium
Hydrated lime	140	Fast	20	Hazardous, difficult to apply
Pelletized limestone	70-95	Fast	50	Easy to apply; more expensive than other sources

\*These are approximate values and will vary with the purity of the individual product.

\*\*Maximum rate in pounds of product/1000 square feet. Multiply by 44 for rate in pounds/acre.

Source: HYG-4026-90

*BYGLOSOPHY—“No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden.” - Thomas Jefferson*



## Another Advanced Training Opportunity!

Just in case you need advanced training hours and don't want to leave home! The computer at the office is also available if you need a faster internet connection. I'm not sure how well dial-up works.

**Coordinated by MGV Thais Reiff, the "me" in the following information: (treiff@ameritech.net )**

Hello. There are some new and exciting webex and/or conference call sessions coming up. We are now opening these sessions to Master Gardener Volunteers, Extension Professionals, and EAB specialists.

As before, each session will last approximately one hour and be offered at 1:30 pm and 6:30 pm each day. For those of you that did not access Amy' Stone's program on invasive insects, you missed a great program. Let me know which one of you is interested in the archived version and I'll send you the access information.

To be more efficient, we have already identified and scheduled the next three sessions. This information appears below. If you plan to attend, please register with me early, and I mean early since we are already getting requests to attend from several other master gardeners across the state and **there is a 22 person limit per session**. You can register for individual sessions or all three in one email, but be sure that you will be available to attend since demand to participate seems to be growing. In fact, one county has asked to use some our webex programs to enhance their new master gardener training. Below are the scheduled sessions for which you can register.

### **Wednesday, March 17th – EAB Outreach**

Webex: 1:30 pm and 6:30 pm

Instead of reinventing the outreach wheel when it comes to EAB, this session will share some examples of outreach efforts that have been implemented in Ohio. We will be saving time at the end of the session to open the lines to hear your experiences and hopefully spark some new ideas too.

### **Wednesday, April 21st - Emerald Ash Borer Diagnostics and EAB Awareness Week Planning**

Webex, 1:30 pm and 6:30 pm

Review the diagnostic signs and symptoms of EAB, and discuss how your county can help raise awareness about EAB during EAB Awareness Week, May 23 - 29. Each participant will receive an EAB Awareness gift pack following the webex.

### **Wednesday, May 19th - Why Trees Matter**

Webex, 1:30 pm and 6:30 pm

An OSU Signature Program, "Why Trees Matter" illustrates the importance and value of trees in our communities, streets, and landscapes. The webex will highlight the program and what things can be done in your county to highlight that trees really do matter!

To register, please contact please contact Thais and be sure to identify which session you plan to attend. Please email me (Thais) if you have any questions.

---

*Coming to garden centers Spring 2010:*

### **Proven Winners Invincibelle® Spirit *Hydrangea arborescens***

The first pink flowered mophead *Hydrangea arborescens*! Invincibelle Spirit is as hardy and adaptable as 'Annabelle' but produces loads of hot pink flowers from early summer to frost. It's a reliable bloomer in the north and is also heat tolerant. May be pruned back in late winter to encourage strong new growth and blooming. Adaptable to most moist, well drained soils.

***Bloom color is not affected by soil pH\*.***

Proven Winners' goal is to raise \$1,000,000 for breast cancer research. \$1.00 will be sent to the Breast Cancer Research Foundation for each Invincibelle Spirit sold. Visit <http://provenwinners.com> for more information.

*\*Note from Nancy: I intend to plant one of these! I'll let you know if it lives up to advertised expectations.*



**This year, why not grow the herb Stevia, sweet plant, as a natural sweetener. What conditions and care are required? How are the leaves harvested?**

*Stevia rebaudiana bertonii* belongs to the chrysanthemum family. It is native to South America, where the plant's leaves have been used for centuries as a sweetener. In the states, Stevia is sold as a dietary supplement under FDA regulations.

You can grow Stevia in the home garden. Plants are quite adaptable, and grow best in a full sun location. Soil should be a rich loam with good drainage. Avoid areas where the soil stays wet for long periods after a rain. It's best to start with transplants from a reliable nursery or garden center. Plants grown from seed are variable in the level of sweetness, so those grown from cuttings from plants with known high levels of stevioside content are best. Plants are tender, so plant after danger of frost for your area. Allow 18 inches between plants, and 20 to 24 inches between rows. Plants will grow to about 30 inches in height and 18 to 24 inches in width. After planting, mulch lightly to suppress weeds and conserve moisture; roots are shallow, so avoid deep cultivation near the plant. Irrigate lightly in dry summer periods and use a low nitrogen fertilizer on the plants. Plants are essentially pest free. Plants can also be grown in a 10 to 12 inch diameter container; a single plant per container. Use a lightweight potting mix for this plant.

Harvest stems in the fall for drying. Cool temperatures and shorter days tend to intensify the sweetness in the leaves. Cut stems from the plant, then strip the leaves. Dry leaves on a screen or net, exposed to sun, with good ventilation. Leaves can also be dried in a food dehydrator, but sun drying is preferred.

Plants can be carried over to the next season by taking cuttings in late summer and rooting them. Keep plants inside in a sunny location through the winter, and plant out the following spring.

Source: Plantfacts

**Average First and Last Frost Dates for Ohio**

City	Spring	Fall
Akron	5/21	10/2
Athens	5/31	9/19
Cincinnati	4/29	10/13
Cleveland	5/18	10/5
Columbus	5/9	10/3
Dayton	4/27	10/16
Lima	5/19	9/24
Sandusky	4/29	10/14
Toledo	5/16	9/29
Youngstown	5/24	9/29

Source: "Climatology of the U.S. No. 20, Supplement No. 1", 1988, National Climatic Data Center, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

**Care for Emerging Bulbs—**

Though some hardy bulbs bloom earlier, foliage of daffodils, tulips, spring snowflakes, and others emerge in early April. After spring cultivation around the plants, replenish mulch, if needed, to a depth of two to three inches. This helps to conserve moisture, suppress weeds, and prevents mud splash to blooms.

Of all the bulbs, tulips are "heavy feeders" and require fertilization as foliage emerges and again after flowering. Fertilize other bulbs after flowering to support foliage and increase bulb size for next season. Use a complete fertilizer, such as a 5-10-10, or 6-12-12 or equivalent, at two pounds per 100 square feet of bed area.

Remove faded blooms after flowering to eliminate seed set that reduces bulb growth for next season. Maintain foliage for six weeks for good growth and re-bloom the following season. Do not cut or braid foliage, but allow it to die down naturally. Foliage can be removed when it has yellowed, fallen over, and comes loose when slightly



The Master Gardener *Green Thumb Print* is a publication of the Hancock County Extension Office, 7868 Hancock County Road 140, Findlay, OH, 45840, 419-422-3851. The Master Gardener Coordinator is Nancy Kronberg.

*Ohio State University Extension embraces human diversity and is committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA.*

Keith L. Smith, Ph.D., Associate Vice President for Agricultural Administration and Director, Ohio State University Extension TDD No. 800-589-8292 (Ohio only) or 614-292-1868