



The Washtenaw Gardener

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Washtenaw County Master Gardener Newsletter

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Master Gardener Fall Harvest Potluck

November 16th at 6:30 p.m.

*Washtenaw County
Farm Council Grounds
Certificate and Award
Presentations*

*to Master Gardeners, Advanced
Master Gardeners and for
Volunteer Hours*

*Please bring a dish to pass for
the potluck - and the recipe with
your name on it.*

*Cindy will collect recipes at the
end of the evening to use in the
MG Newsletter through 2011.*

Thank you



The Gentle Art of Forcing Bulbs

Kathy Buttermore (MG 2010)

Gardeners have been called many things: friendly, kind, patient, persistent, intrepid, quirky. But one thing's for certain, we are definitely forward-thinking.

Meaning fast forward.

Meaning let's get past winter already and on with the floral harbingers of spring. Which is why Adrienne O'Brien, horticulturist at Matthaei Botanical Gardens, addressed a packed house at the monthly Master Gardener Alumni Association meeting October 19 with a talk on forcing outdoor bulbs.

The art of forcing hardy bulbs has been traced back to the ancient Romans, but it was the Victorians who brought this gentle art to the masses. (O'Brien didn't tell us that; I looked it up.)

And the masses are still interested. With rapt attention and lots of questions, we learned the finer points of bulb forcing at Adrienne's talk.

(Woo hoo! Another opportunity to kill something!! Pardon me, I mean to show off my Master Gardener skills.)

As with all things botanical, forcing bulbs begins with having the right plant at the right time.

We learned that some bulbs, such as daffodils,

hyacinth and Muscari, are easier to force than others, like tulips.

We learned when to start the process, the proper temperatures and good locations for the bulbs during the chilling

process, how long they need to - what's the reverse of incubation? - chill, and how to wake them gently from their "long winter's nap," as it were.

(Need I to tell you about the time I stored a bag of daffodil bulbs in my freezer for two years? Just wanted to make sure they got enough cold.)

We also learned that Adrienne, has a temperature- and humidity- controlled room at Matthaei for HER bulbs. (I know what I'm putting on my Christmas list.)

And here's the best part. For \$5, we each got to take home three pots of bulbs: "Tete a Tete" daffodils, "Pink Pearl" hyacinths and Muscari armeniacum (grape ivy for you rookies).

It was a great deal, even though we had to pot them ourselves, probably for budgetary reasons. Still, that's a better value than a \$10 off coupon at DSW, don't you think?



Fall bulb planting will bring spring blooms.

In any case, a good time was had by all. Many thanks to Adrienne for providing clarity on how to proceed with this most gentle art of forcing bulbs. (Gentle. Forcing. Seems like an

oxymoron.) I look forward to hearing of everyone's successes come March.

2011 Docent Training Information Sessions

December 14 and 16

1:00 -2:30 pm

Matthaei Botanical Gardens

Inspire future generations of environmental stewards as an Arb and Gardens docent!

Applications are being accepted now for 2011 Docent Training, which will run for eight weeks beginning Monday, January 17. Classes will be held each Mondays from 9 a.m.-noon at the Gardens.

During the academic year, docents work in small teams to lead interpretive programs for school groups, as well as evening and weekend activities for youth and family events.

Docents develop skills in interpretation and active learning while sharing enthusiasm and knowledge of the natural world with learners of all ages.

If you're interested in learning more about this volunteer opportunity, you can get an application, set up an interview and find out about registering by contacting Matthaei Volunteer Coordinator Tara Griffith at tgriffit@umich.edu or call her at (734) 647-8528.



The bulb-potting assembly line got going.



This year's crop of docents lead interpretive programs.

MSU Key Partner Award

Kathy Squiers, second from right, holds her award flanked by, left to right, Cindy Fischer, Master Gardener Program Coordinator; Bob Bricault, Extension Educator; and Matt Shane, MSU District Coordinator.

Kathy Squiers, horticulturist for Washtenaw County Parks and Recreation, received the Michigan State University Extension's Key Partner Award on October 18.

Kathy has been instrumental in partnering with MSU Extension to provide educational outreach through the Master Gardener program.

Every spring for more than eight years, Kathy has attended a volunteer fair to encourage Master Gardener students to join in helping her to develop educational garden displays and materials.

Kathy's enthusiasm is contagious, especially when she speaks on the use of native plantings. Master Gardener volunteers return every year to work and learn under her direction. Over the last five years, Master Gardeners have provided more than 1,500 volunteer hours under her leadership.

When Master Gardeners were asked why they return to volunteer with her, they point to her dedication, hard

work and desire to share her knowledge. Kathy values volunteers' advice and provides a collegial atmosphere where Master Gardeners feel appreciated in providing educational outreach to the public.

Kathy is uniquely qualified to manage over 750 garden beds at five parks and a golf course. Not only does she bring more than 25 years of gardening experience to her work, but also the ability to coordinate, teach and provide leadership to dozens of volunteers helping with the Washtenaw County Parks.

Kathy has a bachelor's degree from the University of Michigan in landscape planning and design and attended the University of Colorado to study analytical chemistry. She has worked as a landscape designer for Plymouth Nursery and as an assistant horticulturist for the U-M grounds department. Since 1999, she has been the Parks and Recreation horticulturist for Washtenaw County.

Kathy says that gardening is in her blood. She is a descendant of Paul Saunier, a journeyman gardener, who accompanied plant explorers to the United States in the 1800's.

TALES FROM THE HIVE

Richard Mendel (MG 2009)



This is a column dedicated to general interest questions about bees, especially honey bees, and how they interface with agriculture, humans, animals and the environment. Please send questions to Richard at brescue@att.net.

Questions of interest to most readers will be answered in the monthly newsletter. Some of the answers may be short, which means more can be published.

If your question is urgent or involves a safety issue concerning honey bees, such as removing a swarm, please call me directly at 734-660-8621.

In this column, I'd like to take up several issues

that have come up recently. For example, at a honey-extracting demonstration at Nichols Arboretum and Matthaei Botanical Gardens this fall, attendees had a difficult time accepting the idea of adulterated honey and bootlegged honey coming into the United States from foreign countries.

It's probably easier to print a noteworthy news article on the issue from the BBC News rather than go through the myriad questions that came up at the demonstrations.

U.S. indicts 11 executives for honey smuggling

U.S. authorities have indicted 11 German and Chinese executives for conspiring to illegally import \$40 million worth of honey from China.

The executives were accused of being part of an operation which mislabeled honey and tainted it with antibiotics in an attempt to avoid import duties.

The case is part of a crackdown on illegal imports of substandard and counterfeit products.

Officials say it is the biggest food smuggling case in U.S. history.

Ten of the suspects were senior executives at Alfred L. Wolff, a German company which allegedly bought cheap Chinese honey and, en route to the United States, filtered out "pollen and other trace elements that

could indicate that the honey originated from China," according to the charge sheet.

A sales manager from the Chinese-based QHD Sanghai Honey was also indicted.

Some of the honey was mixed with Indian honey to disguise its origin, or adulterated with antibiotics, in an attempt to avoid paying \$80 million in import duties.

Illinois attorney Patrick Fitzgerald said most of the honey was of a commercial grade and would have been diluted before being sold, and that it was not believed to be a risk to health.

"There is no allegation and no reason to believe that any of the honey involved in this case had led to any injury or illness," he said.



Honey bees work in their hive.

Those involved are alleged to have made 606 illegal shipments over six years, beginning in March 2002.

Senator Charles Schumer said he welcomed the fact that law enforcement agencies were taking "honey laundering" seriously.

"Now we also need the FDA (Food and Drug Administration) to weigh in with a national honey standard to make sure this crackdown on Chinese imports sticks," the New York Democrat said in a statement.

My only recommendation is to know the source of your honey and the reputation of the beekeeper that is selling it.

I have received a number emails from people who are cognizant of the current plight of honeybees and would like more information about beekeeping and bees in general. I also have had many questions about keeping a single hive to supplement a new garden or to harvest their own honey.

I can only start by saying bees are without question wild creatures and will never fit into the category of being considered domesticated or tamed. It may be like wanting to raise alligators, with the exception that bees are a lot smaller and there are many more of them.

Left to their own devices, they will not usually bother you. But give them a reason to be upset with you, and they will let you know that "now is not a good time."

I personally believe the salvation of our honeybees and, in particular, the few, if any, feral colonies that still

exist, will be saved by the backyard beekeeper. They will prevail because their passion is one of the heart and not the pocket book. They will experiment and be involved at such an intimate level with their bees that no number of failures will dissuade them from coming back and trying to find the right path to viability.

Okay, let me put the soap box away and share some practical approaches.

The first and most obvious thing that will help you start up is the Internet.

Just type "bee culture" into Google and you will be overwhelmed by the amount of information there. Go to YouTube and you can stay up all night watching clips of new beekeepers, old beekeepers, scientists, commercial beekeepers and even a clown thrown in for good measure.

The first question you want to ask yourself is, "Why do I want to keep bees?" A soul-searching answer will determine your level of dedication.

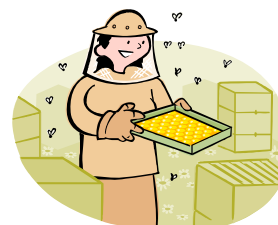
Once you have answered that question, you are ready for action. Or not.

It can be costly in both time and money, depending on your approach. To go native and completely organic could cost you only in time. I would definitely advise seeking out a local group or club in your area to start out. Associating with others on a personal basis allows you to ask questions and gain insights that are hard to come by on the Internet.

Still, start by going to the Michigan State Beekeepers Association's website at www.michiganbees.org and find contact information for local beekeeper groups in your area. I am aware of several in the Ann Arbor area, including the South East Michigan Beekeepers Association (SEMBA) at www.sembabees.org and Bobilin Honey at www.bobilinhoney.com. You also could email Lisa Bashert with Growing Hope in Ypsilanti at info@growinghope.net or me at Ann Arbor Backyard Beekeepers (A2B2) at brescue@att.net.

In addition, SEMBA has a great season-long beekeeping class at Tollgate which is a MSU demonstration farm in Novi. There are also many local independent beekeepers who are pretty self sufficient.

Beekeepers love to talk about their bees given the chance. Who knows, you may find one who may even appreciate a willing pair of hands in the apiary.



Celery? Really?

Donna Conaway (MG 2009)

Richard Mendel suggested I write an article on celery, based on a Wall Street Journal article "Celery's Taking Root," by William R. Snyder.

While Richard was telling me about this riveting topic, I was thinking, 'I'd rather watch my hair grow.'

How wrong I was.

Did you know that some farmers lean boards up against each other to get their celery paler, and so less bitter? That's according to Alexander Young, managing partner - and wicked good and famous chef - at Zingerman's Roadhouse.

Have you ever experienced blood-red, bright gold or white celery? With our eyes closed, I wonder what this taste test would be like.

Growers of heritage celeries let the leaves run wild, which intensifies the stalk's taste, while commercial growers trim back the leaves, to encourage stalk growth but reducing the vegetable's flavor potential by a third.

"The leaves - often trimmed and forgotten - are considered to be a cleaner, deeper cousin of cilantro," wrote Snyder. "And the stalks provide a crisp texture that carries traces of a carrot's sweetness, parsley's bitterness, fennel's licorice and caraway's anise - all cousins of the plant."

And though they belong to the same family and species, *Apiaceae graveolens*, celeriac, a big, ugly root, is not the root of the everyday celery, grown for its stalks and leaves. They are different varieties.

Celery's earliest cultivation dates back at least 3,000 years. It originated around the Mediterranean and was used primarily for medicinal purposes.

By the Middle Ages, the plant had evolved into a staple vegetable across Europe and Asia.

Centuries later, Kalamazoo is the self-proclaimed celery capital of the United States.

The first plants were brought there in 1856 and thrived in the fertile muck in the area until World War II, when blight and diminishing water supply pushed



Celery

the industry to California. Celery could be grown year-round there, and variety was sacrificed for steady production. (Basically, only two varieties, Pascal and Golden Heart, are commercially grown in California.)

Tantré Farm outside Chelsea dedicates half an acre to celery and also grows celeriac. "The strength of flavor with the heirlooms is not even like comparing white bread to wheat bread," states farm owner Richard Andres in the Wall Street Journal article. "It's more like comparing generic white bread to old-world, artisan-baked loaves. It's high octane."

Andres grows Conquistador, Tango and Giant Prague Celeriac (var. *rapaceum*) grown for its knobby edible root.

The root ball of heritage celeriac, such as Giant Prague, has an earthy, nutty taste that is lively on the tongue when paired with vinegars. Roasted, it accomplishes naturally what the potato needs a vat of seasoning to do, with hints of coriander and caraway.

Unrefined sea salt is used in many preparations of celeriac. This process sweats out the bitterness in much the same way you salt eggplants, explains Chef Young.

Interested in trying some celeriac?

Zingerman's has it available from time to time, says Rodger Bowser, executive chef at Zingerman's in Ann Arbor.

Bowser, who buys his celery direct from Tantré Farms, says one of his favorite dishes is Alsatian Celery Tantré Tatin.

At Zingerman's Roadhouse, Young, who grows many of his own vegetables for the restaurant, also purchases from Tantré Farms. His favorite dish is braised celery.

You can bet both Bowser and Young are fussy about quality and taste.

Michigan is an ideal place to grow the great tasty varieties, Coste Piene Rosate, Dorato d'Asti, Heung Kunn, Giant Prague Celeriac, Conquistador, Tango, Zwolsche Krul and many more.

Brilliant colors, fabulous tastes, it's up to us master gardeners to get the yawn out of celery!



Celeriac

"So Easy to Preserve"

Have you ever had an abundance of fresh produce from your garden and wished you had the skills to preserve it for later use?

The University of Georgia Cooperative Extension is offering the fifth edition of its popular book "So Easy to Preserve."

This 375-page book contains the latest U.S. Department of Agriculture recommendations for safe food preservation and has more than 185 tested recipes, along with step-by-step instructions and in-depth information for both new and experienced food preservers.

To get your own personal copy for only \$18, contact Cindy Fischer at 734-222-3948 or email her at fischerce@ewashtenaw.org.



Master Gardener Recipes

Pumpkin Pie Cake Pat Wilcox (MG 2007)

Topping:
1 cup cake mix
½ cup chopped nuts
½ stick oleo

Crust:
Remaining yellow cake mix
1 stick oleo
1 egg

Filling:
1 13-ounce can pumpkin
3 eggs
½ cup brown sugar
½ cup sugar
1 ½ teaspoon cinnamon
2/3 cup evaporated milk



Spread crust in 9 x 13 inch pan, pressing down with floured fingers. Pour filling over crust. Top with topping. Bake at 350 degrees for 50 to 55 minutes.

Winter Squash Bisque

6 medium acorn squash
3 14-ounce cans chicken broth
¾ teaspoons ground ginger
¾ teaspoon salt
¼ teaspoon pepper
1/8 teaspoon ground cinnamon
1-1/2 cups half-and-half or light cream
¾ cup dairy sour cream (optional)
Fresh thyme sprigs (optional)

Halve squash and remove seeds. Place squash halves, cut sides down, on a baking dish. Bake in a 350-degree oven for 30 minutes. Turn cut sides up. Bake covered, 20 to 25 minutes or until squash is tender.

Scoop out squash pulp using a spoon; discard skin. Place pulp in batches in a blender container or food processor bowl. Cover and blend or process until squash is smooth, adding some of the chicken broth if the mixture is too thick.

Stir together pureed squash and remaining chicken broth in a large saucepan. Stir in ginger, salt, pepper and cinnamon. Bring mixture to boiling. Reduce heat and stir in half-and-half or light cream. Heat through, but do not boil. If desired, garnish each serving with sour cream and thyme sprigs.

Makes 12 servings.

Pumpkin Bread Phylliss Ponvert (MG 2010)

2 Loaves
350 degree oven
3 cups sugar
1 cup vegetable oil
4 beaten eggs
2 cups canned pumpkin
3 cups flour
2 teaspoon baking soda
½ teaspoon baking powder
2 teaspoon salt
1 teaspoon cinnamon, nutmeg, cloves
2/3 cup water
1 cup raisins and nuts



In large bowl: Mix sugar, oil, eggs, pumpkin; beat well
In another bowl: Sift together, flour, baking soda, baking powder, spices, salt and mix well
Add dry ingredients to wet, alternating with the water. Fold in nuts and raisins, pour into 2 greased pans.
Bake for 1 hour 20 minutes
(check at 50 minutes)

Sweet Cider Apple Butter

Makes about 4 pints

6 pounds apples (about 24 medium)
2 cups sweet cider
3 cups sugar
1-1/2 teaspoon cinnamon
1/2 teaspoon cloves

To prepare pulp: Wash apples. Core, peel and quarter apples. Combine apples and sweet cider in a large saucepot. Simmer until apples are soft. Puree using a food processor or food mill, being careful not to liquefy. Measure 3 quarts apple pulp.

To make butter: Combine apple pulp, sugar and spices in a large saucepot, stirring until sugar dissolves. Cook slowly until thick enough to round up on a spoon. As mixture thickens, stir frequently to prevent sticking.

Ladle hot butter into hot jars, leaving 1/4-inch headspace. Remove air bubbles. Adjust two-piece caps. Process 10 minutes in a boiling-water canner.



Master Gardener's Receipt's continued.....

Scandivavian Almond Cake

Joanne Westman

Spray pan with Pam or Cooking Spray

Beat well:

1 ¼ cup sugar

1 egg

1 ½ tsp. pure almond extract

2/3 cups milk

Add: 1 ¼ cup flour, ½ tsp. baking powder

Add: 1 stick melted margarine

Mix Well



Bake at 350 for 40-50 minutes. Edges must be golden brown. Cool in pan before removing. Cake will break if removed too soon.

Sprinkle with confectionary sugar.

Variation: before pouring batter into the pan, sprinkle sliced almonds on the bottom.

Almond Bars

1 cup butter

8 oz. almond paste

2 cups sugar

2 eggs

½ teaspoon salt

2 cups flour

½ cup sliced almonds



Preheat oven to 300 degrees. Cream butter and almond paste, until fluffy and light. Beat in sugar and eggs to combine. Add salt and flour and stir until incorporated. Spread evenly in a lightly greased 9 x 13 pan. You may need to spread gently with the back of a spoon or your fingers if it is thick.

Bake for approximately 45 minutes or until mixture is set and edges brown lightly.

Biscotti Toasted Almonds

6 eggs, beaten

1 1/2 cups sugar

1 tsp anise seed

1 tsp vanilla

1 cup oil

2 cups flour

1 1/2 tsp baking powder

1 lb. almonds, chopped



Beat eggs. Add sugar, oil, vanilla, and anise seed. Stir. Add sifted flour, baking powder, and almonds and blend well. Pour into a large greased and floured baking dish. Bake at 350 for 25 minutes. Cool. Slice about 1" x 2" squares and lay on side and brown at 300 for 30 minutes more.

Pumpkin Layer Cake

Cindy Fischer

Ingredients

Dry Ingredients

2 ½ cups all-purpose flour

2 tsp baking powder

1 tbsp. cinnamon

1 tsp. nutmeg

1 tsp. ginger

1 tsp. baking soda

½ tsp clove

½ tsp salt



Wet Batter Ingredients

2 cups canned pumpkin puree

1 (300 ml) can eagle brand sweetened condensed milk

1 cup white sugar

½ cup packed brown sugar

1 cup canola oil or vegetable oil

4 large eggs

Frosting

12 oz cream cheese, softened

8 tbsp. unsalted butter, softened

3 ½ cups icing sugar

1 tsp. vanilla

½ tsp. allspice (optional)

3 drops food coloring (optional)

Directions

Dry ingredients: Sift dry ingredients together.

Wet batter ingredients: with electric mixer on medium speed, beat pumpkin and sweetened condensed milk together until smooth. Add remaining ingredients in order, beat well after each addition.

Combine: with mixer on low speed, add dry ingredients into wet batter ingredients, mixing until just mixed.

Bake: pour into 2-9 inch greased and floured round baking pans and bake in preheated 350f oven until toothpick inserted in center comes out clean, about 35 minutes. Turn cakes out onto wire rack. Cool completely.

Frosting: with electric mixer beat cream cheese and butter together until smooth. Beat in remaining ingredients. Place one cake layer, rounded side down, on cake plate. Cover with 1/3 of icing. Place second layer on top, rounded side up. Frost sided and top with remaining icing. Chill.

ENJOY!

Master Gardener Alumni Association of Washtenaw County News

The Master Gardener Alumni Association of Washtenaw County meetings are held on the third Tuesday of the month starting at 7 p.m. in the basement conference room of the County building at 705 N. Zeeb Road. The MGAAWC "year" runs from September through the following May.

Annual dues are \$20 and may be paid at any meeting or mailed to the MGAAWC Membership chairperson. (See the application form elsewhere in the newsletter.) Other non-members may attend any meeting for \$5. MGAAWC meetings provide an excellent and easy way to obtain the educational credits needed to meet the requirements for MG re-certification.

The annual Master Gardener banquet will be held at 6:30 p.m. on November 16 at the Washtenaw Farm Council Grounds, 5055 Ann Arbor-Saline Road. The next educational meeting is scheduled for January 18, 2011. Watch the weekly update for more details on this meeting.



Master Gardening Clothes Available for Purchase

You can order items from a line of Master Gardener clothing, including T-shirts, sweatshirts, denim shirts, polo shirts, fleece vests and hoodies – both pullover and zip front. The clothing is offered in a variety of colors.

Payment will need to be made at the time of the order. Prices range from \$9.50 to around \$50.

Master Gardener Tote Bags

Master Gardener canvas tote bags are for sale at a cost of \$15 each.

The bag has the Master Gardener logo and "Master Gardener Volunteer" printed on one side. It has a zipper closure across the top and is large enough to hold the Master Gardener manual.

There is a bag on display at the MSU Office for viewing. Stop by the MSU office to purchase yours.



Master Gardener Alumni Association of Washtenaw County Membership Enrollment Sept. 2010 thru August 2011

(Please Print Clearly)

Name: _____ MG Year completion _____

Address: _____

City: _____ State: MI Zip _____ - _____

Phone: (day) _____ (evening) _____

Email: _____

Mail enrollment with a check for \$20 dues, payable to:

**Master Gardener Alumni Association or MGAA
c/o Pat Belluci
5312 Fox Ridge Ct
Ann Arbor, MI 48103**

Check this box if this is an email change

New items:

Gardening interests:

Please Circle: Yes / No to include personal information in Alumni Membership Directory

Vermiculture 101 or Worm Farming Maggie's way

Jesse Raudenbush (MG 2010)

I have two purposes in writing this article: Sharing a little bit of my personal story and history in regards to worm farming, as well as providing some basic background information on vermiculture, including a few of the many little-known benefits associated with it.

Worms naturally compost by continually "processing" (by digesting and excreting) decaying organic matter. After a time they create a completely odorless, reusable, nutrient-rich, all-organic substance (or humus), better known as castings. Vermiculture is simply getting worms to do this in a controlled environment.

But let's start at the beginning.

My personal story with worm farming goes back to early childhood. My grandmother, Maggie "Granny" Pipkins, owned and operated a worm farm on Cape Cod in Massachusetts.

She needed the freedom to work from home. My grandfather was in the Air Force drawing pay that met the needs of the household but not the money needed to send my mother and her four siblings to the schools my grandparents felt were suitable.

When he had the time, my grandfather was also an avid fisherman, and one day he came home from a fishing trip with a few extra worms.

My grandmother, having read about people raising worms for profit, was quick to begin experimenting with raising more worms.

Starting literally with a handful of worms, she began feeding them different types of yard and food scraps. She observed them, watching for which foods the worms ate the fastest, which meant that's what they liked the most.

After not too much time, she began to notice more worms in her makeshift worm bin.

Dividing the original population of worms, Granny tried different types of bedding to see if any materials seemed to keep the worms "happier" than others.

Coming from a farming background (her parents were Louisiana share-croppers), Gran seemed to have a knack for not only knowing the basic needs of living things, but also an amazing affinity for informal scientific observation. My granddad would say that she kept meticulous mental notes, "so don't get on her bad side."

Before starting the worm farm business, my grandmother was a fulltime wife and mother, as well as a seamstress, a beauty care saleswoman, a trained beautician working out of her own basement and a few other things when my grandfather was stationed in Japan.

After a couple years of testing and refining, the worm business grew. My grandmother got to a point where she would farm all summer and fall, but cut back to doing just hair in the winters.

Granny really didn't need to do hair anymore, but had a couple of long-time clients who had evolved into long-time friends. They were relationships that she just couldn't let go of.

Hazel was probably the sweetest of Granny's hair clients I can remember. A woman of small stature who was always dressed smartly, she would come in and say hello to everyone, making polite small talk. A few minutes later after she'd descended to the basement/hair salon we would hear thunderous roars of laughter mixed with creative expletives that would make any sailor proud. Sometimes my grandfather would send me outside. I think Granny loved Hazel so much because they were two peas in a pod.

Fast forward a few years and I had finally come of age. Growing up in inner-city Boston, I would regularly be sent out to the cape by my parents for the summer to get me out of the city and away from all of its summer temptations.

Being the child of a working class family shipped out to a then-vacation hot spot for the rich - "Man! For the whole summer?" - was looked upon by me as a punishment at first. That lasted until I was old enough to work on the farm - AND get paid too!

I swear I would have done it for free, but Granny would never have that. Well into my 20s, I spent at least one or two months of every summer working on the farm. The funniest thing is that it never really felt like work. Every day held something new to do. If ever any chore got mundane or redundant, I could simply walk away and do something else for a while.



Maggie "Granny" Pipkins
1916-2007



Mt. Moo-dung

There was always something to be done but realistically not every farm job was fun. One summer I personally shoveled 10 tons (yes 20,000 pounds) of cow manure to feed the thirty 8-by-4-foot in-ground worm beds.

Because of this proud fact, people who say they have a "shitty" job have never impressed me, and nearly none of them appreciate my explanation of just why not.



Eisenia fetida are hardy and easy to raise.

Granny had a great sense of humor. That same summer, on the second day I had been in town, she had gotten me up early and made me a huge breakfast southern style, ya know?

I had just about finished when I heard that high-pitched beep of a large truck backing up. "Well, let's get to work," she said. "Sounds like they're here."

I was clueless. The two of us walked out back just in time to see the bed of a huge dump truck (a 10-ton dump truck) beginning its slow, angled ascent.

Granny had a grin from ear to ear as that heavy metal door swung open unleashing ten tons of fresh, high-grade, top-quality (and extra ripe) "moo-dung". She was actually giggling as she told me what my primary task would be that summer.

She went on to say the only likely difference between that day and

any of the following days that summer would be that she wouldn't be cooking breakfast everyday. The implication being that I *would* be shoveling shit every day.

It took the better part of two months but I did it. Now I grin every time I see a huge pile of cow poop. I've come a long way from a shovel and a wheelbarrow, thank God!

Needless to say, I could go on about my early worm farming adventures and the exchanges with Granny. Maybe another time. I really want to share some of the worm details, too.

But before I get into specifics, I want to make clear that the information I'm sharing has been passed down to me from my family through our own personal experience and years of doing this.

We do this on a very large scale, so some of our methods may not be best for smaller operations. But these are some of the conclusions we have come to and the methods we have found to be of best use for us.

One can find almost too much information on the subject of composting with worms on the Internet. With access to such a vast amount of information, it can be a bit overwhelming, and a lot of conflicting information abounds as well.

My best advice is to do it like my grandmother did: Start small, see what works and go with it. There is very little that one can do wrong in vermiculture.

Let's start with some facts on the worms we raise: *Eisenia fetida* (see photo above), sometime spelled *Eisenia foetida*, as well as red worm and red wiggler, among many other names.

We find this to be the most efficient composting worm available. Coupled with their hardiness and relative ease in proliferation, red wigglers are really hard to beat.

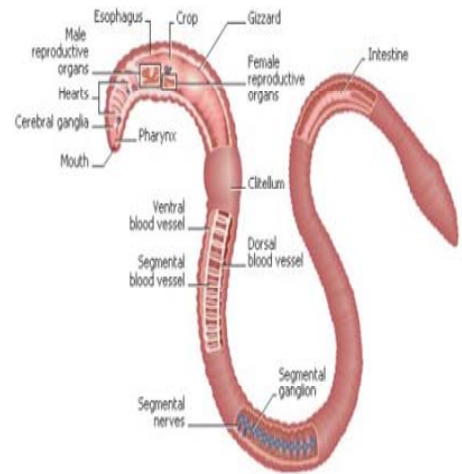
Common questions

How often do worms breed?

About every 27 days. Worms can double their numbers every 60 days. The rate of population increase can be controlled by feeding regime and system size. Each worm can lay between 4 to 12 eggs.

How long do worms live?

It's not uncommon for them to live about 2 to 3 years given the right conditions.



This cross section displays the simple structure of a worm. There is not much to them at all.



Red wigglers eating a gourd from the inside out. After two days, this 3-pound gourd had about 2 pounds of worms inside it.

How much do worms eat?

More than their own body weight per day. A thousand worms eat roughly 1 pound of organic waste per week.

What do worms eat?

The only absolute "never feed" items are meat, dairy and large amounts of cooking oils. It's also been our experience that, while worms can process a lot of things, we don't recommend some of them in terms of achieving optimal composting conditions. Like people food, certain things just don't settle as well for worms as other things might. If possible try to avoid citrus, hot peppers, coffee grounds (no nutritional value for the worms) and large amounts of bread. Again, you can feed them these things; however, you will notice that they will eat just about everything else first, leaving these items for absolute last.

Remember also that the end result of our efforts are the worm castings. We want a fully composted odorless humus. If the worms don't like something, they will often not process it completely.

Lastly, if it is organic and wasn't mentioned above, it's probably fair game as far as good worm feed, i.e. grass clippings, leaves, weeds (Note: I have a separate worm bed for weeds. This bed is allowed to compost for a much longer period of time to make sure all weed seeds decompose before I use the remaining castings in my gardens.)

Worms can also compost lead-free paper, uncorrugated (non-glossy) cardboard and dryer lint. However, we suggest introducing these after you have had your system up and going for a while. We have found that well-established systems can adjust themselves and adequately compost these things better than younger systems. Basically, I like to



Whether the worms are in a small, movable bin or a large, permanent, in-ground bed, they form a living ecosystem.

beef up my worms (and microbes) a bit before I start feeding them the heavy duty stuff. Remember, start small.

Basics on raising worms

Working with worms has given me a better appreciation for how Mother Nature works. Certain things can't be rushed, and furthermore, Mother Nature's established processes can rarely be improved.

A vermiculture system - be it a small and movable bin or a large and permanent in-ground bed - is a living ecosystem. As in a regular compost pile, a balance must be met in order for the composting cycle to be carried out.

That being said, I have personally always found that it is immeasurably easier to maintain this balance composting with worms than with a traditional compost system. If you can pretty much keep your worms happy, they will do the rest without reservation. Not only will they do the brunt of the work, but they do this 10 times faster than traditional composting with - in my opinion - a superior end product.

Here are some things to remember:

Provisions: Worms need moisture. They breathe through their skin which must be moist for respiration. An adequate bedding layer helps maintain moisture. Worms also need oxygen, so providing adequate circulation is a must. As for temperatures, there is some debate, and you can find varying numbers on this. I've personally found that my worms thrive best between 55 degrees and 77 degrees. Over 84 degrees and they are close to being cooked; below freezing and you have "worm-sicles".

pH levels: Red worms seem to do best when the pH level is around 7.0 but are known to tolerate levels from 4.0 to 8.0 or above. The pH is something I do not check regularly, if at all. In the event that a bed or bin seems to be doing not so well, I may then check the pH, but only then. Keeping mental notes on what you are putting in your system may help to get vague idea of what your pH range might be.

Turnaround time on castings: When to harvest castings from your bed or bin depends greatly on the amount of worms you have working for you. A good rule of thumb is about three months. You should increase the composting time if you are composting manure and if the castings are to be used on food crops, as opposed to ornamentals. Given adequate time, worms can and will remove human pathogens from manure.

You will be able to tell when the worms should be separated from the castings. (There are several techniques for this.) The remaining substance is of a humus-like consistency, fairly fine-textured and dark brown to black in color. And yes, finished castings are completely organic, odorless and non-toxic.

Benefits and uses of worm castings: This is the primary reason that I compost with worms. I am always so excited to tell folks about the results I have gotten with the use of worm castings.

Check this out! The castings suppress a number of plant diseases, including:

Foliar diseases

Botrytis
Powdery mildew
Plectosporium blight
Septoria lycopersici - tomato leaf spot
Alternaria solani - early blight

Soil-borne diseases

Pythium
Rhizoctonia
Fusarium
Schelerotinia
Clubroot Plasmodiophora brassicae
Verticillium wilt
Phytophthora
Phomopsis

Excited yet?

Most of us should remember MG class where we learned that healthy and vigorously growing plants often have the ability to outgrow disease and fungal attacks. This plays in closely with how and why castings work with quick and measurable results.

Castings are broken down to such a state that plant root uptake of abundant and essential nutrients is amazingly easy. Imagine eating a banana, then imagine slurping up a banana shake. Get it?

Some other uses of castings are as fertilizer and plant food, as well as amending soil and making potting mixes.

Castings will never burn your plants or crops due to overfeeding, so no exact measuring is necessary. (Yay!)

We have found the best results using only about 20 percent castings by volume, 80 percent other potting or planting media. The astounding results and the variety of applications makes using castings feel almost like cheating.

By leaching castings through highly oxygenated water, you can create the microbial brew called "worm tea," a valuable liquid form of castings useful as a foliar mist or simply for watering your plants. Again, this will not burn even the most delicate of plants. For the sake of time, I can't even get into the exciting uses of worm tea as an organic pesticide, but, yep, it works!

Castings can be stored forever, and what's super cool is that at any given time you can "re-activate" worms in a batch of castings because your finished castings will still have dozens, if not hundreds, of unhatched worm eggs. At any given time, you can add new decomposing organic matter, and shortly thereafter the eggs will begin to hatch, starting a whole new vermiculture habitat.

Likewise, if you simply apply the castings to amend the soil surrounding your plants, the eggs will eventually hatch, giving you dozens of new garden residents whose sole purpose is to continually till your soil, while also promoting vast and vigorous root development. Pretty amazing, eh?

While I have omitted no small amount of tips and details on worm composting, I do hope that this preliminary information is enough to get some interest flowing on the subject.

With the current push towards self-sufficiency, I believe that vermiculture can and will play an integral role. It needs to be known that this is something anyone can do - a lot of folks already do.

Keep it simple, start small, see what works and go with it. You will not be sorry, but you may find yourself hoarding your finished castings, as this "black gold" is truly a gift from nature with big payoff.

(Questions or comments may be directed to Jesse Raudenbush at Jrauden@email.com.)



This is one tomato plant, above, shown end to end. It was fed less than half a pound of worm castings moderately late in the spring, in late April or early May. As of October 25, it is still putting out heaps of tomatoes.

Below is a nearby tomato plant fed at the same time. However, this one however was showing serious signs of blight at the time the castings were introduced. It bounced back beautifully and is also still producing healthy fruit in abundance.



November-December Calendar

Hidden Lake Gardens

Arboretum and Gardens - M-50, Tipton 517-431-2060

<http://hiddenlakegardens.msu.edu/>

Call for class fees and to register

Designing Gardens for Year-Round Interest

Saturday, November 13

10:00 a.m. - 12:00 p.m.

Growing Lion's Mane Mushrooms on Logs

Tuesday, November 16

6 - 8 p.m.

Flowers for Thanksgiving

Monday, November 22

6 - 8 p.m.

Matthaei Botanical Gardens & Nichols Arboretum

1800 Dixboro Road, Ann Arbor 734-647-7600

<http://www.lsa.umich.edu/mbg/>

Call for classes and to register

Growing Your Own Mushrooms: Workshop III

Wednesday, November 17

6 - 8 pm

Washtenaw County Parks Nature Programs

734- 971-6337

<http://parks.ewashtenaw.org> see calendar of events

Visit the web site for more info on classes

Fall Woods Walk

County Farm Park

Sunday, November 7

2 - 4 p.m.

Exploring Northfield Woods Preserve

Sunday, November 21

2 - 4 pm

Stewardship Workday- at the Johnson Preserve

Saturday, November 20, 11-2pm

Johnson Preserve

4480 Platt Rd.

Ann Arbor

Join Legacy and the Professional Volunteer Corps in removing invasive shrubs.

The 2011 Science, Practice & Art of Restoring Native Ecosystems Conference

Friday-Saturday, January 21-22, 2011

Kellogg Conference Center, East Lansing

Stewardship Network's annual conference

MSU Extension Washtenaw County

734-997-1678

Dial A Garden for Nov-Dec

Phone 734-971-1129 to listen to current topics

- ◆ Amaryllis
- ◆ Winter Protection of Trees and Shrubs
- ◆ Choosing and care of Christmas Trees
- ◆ De-Icing Sidewalks
- ◆ Home invading pests
- ◆ Planting hardy bulbs
- ◆ Tips on selecting an arborist
- ◆ Autumn garden clean up
- ◆ Winter protection for tender plants
- ◆ Growing vegetables indoors



Legacy Land Conservancy

<http://www.legacylandconservancy.org>

Hudson Mills Activity Center

734- 426-8211

<http://metroparks.com/calendar> see calendar of events

Visit the web site for more info on classes

Bird Hike

Saturday, November 6

8 a.m.

Fee: \$2 per person

Metro Beach Nature Center

586-463-4332

<http://metroparks.com/calendar> see calendar of events

Visit the web site for more info on classes

Nature Prepares for a Winter Hike

Saturday, November 20

1 p.m.

Fee: \$2 per person

Hudson Mills Activity Center

734- 426-8211

<http://metroparks.com/calendar> see calendar of events

Visit the web site for more info on classes

Bird Hike

Saturday, December 4

8 a.m.

Fee: \$2 per person

6960

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**TIME SENSITIVE MATERIAL ENCLOSED
PLEASE DELIVER PROMPTLY**



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