Instead of focusing on the ‘decline of bees' lets take a more positive approach. What can be done to help bees and invite them into our flower beds.

How do they work? More than 100 agricultural crops in the U.S. are pollinated by bees. Bees actively seek out nectar to feed the colony. Nectar is loaded with sugar and is the main source of energy for bees. Pollen contains protein and fat and usually rubs off on the bee, or any other pollinator, by accident. In the case of bees the pollen sticks to the hair or in between hairs where it hitches a ride to other flowers, pollinating them. In the case of the honeybee the pollen takes a ride back to the colony where it may be exchanged with other bees when they touch. From here it hitches a ride on the second bee back to a flower where it provides pollination.

When promoting an environment for bees and other pollinators it is important to provide flowers that produce food. Hybridized flowers are often sterile and have no source of food available for bees. Native plants or older heirloom plants are good sources of nectar and pollen for bees. Even if your goal is to pollinate vegetables or fruit it is important to have ornamental flowers available to provide a year round food source. A short list of flowers that can be used include:

- Aster
- Basil
- Black-eyed Susan
- Creosote bush
- English lavender
- Giant hyssop
- Globe thistle
- Huckleberry
- Hyssop
- Joe-pye weed
- Lupine
- Marjoram
- Oregon grape
- Penstemon
- Purple coneflower
- Rabbit-brush
- Rhododendron
- Rhododendron
- Rosemary
- Sage
- Stonecrop
- Sunflower
- Helianthus
- Wallflower
- Eriogonum
- Wild buckwheat
- Ceanothus
- Zinnia
- Zinnia

There are many types of bees contributing to pollination.
Honey bees help to pollinate melon, cucumber, squash, pumpkin, apple, pear, blackberry, blueberry, cherry, nectarine, peach, plum and sunflower.

Solitary bees nest in the soil. These bees pollinate blueberries and early blooming plants because they emerge earlier in the year than other bees. They also pollinate squash, pumpkin and gourd. Because they nest in soil their nests can be damaged by tilling or plowing, affecting the bee population.

Other solitary bees nest in holes that are 5/16-3/8 inch wide. These bees can be found in reeds, wood holes and old beetle tunnels. If you want to promote these bees which help to pollinate apples and other fruit, hang up a pvc tube that has been filled with straw tubes and see if your made from scratch home attracts bees. Place these 'homes' out in the spring and make sure the tunnels are larger than 5/16 inch.

Bumblebees, the large black and yellow bees, make homes in old rodent nests or cavities in plant debris or in soil. Bumblebees pollinate fruit and vegetables and are especially useful on windy or rainy days when smaller bees can not fly. These bees can buzz over a flower and release pollen from their bodies aiding pollination.

Carpenter bees make their homes in wood. They have the look of a bumblebee but have a shiny abdomen (waist). These bees are not desirable pollinators as they damage the flower to reach the nectar. Work to plug up their tunnels if you find them.

Other pollinators are not actively looking for pollen but because they feed on nectar they aid in pollination of specific flowers. Flies are attracted to flowers that smell bad, butterflies are attracted to flat flowers, moths and bats may pollinate flowers that are open at night, hummingbirds look for trumpet shaped flowers while beetles and ants crawl around feeding on other insects. Birds, and hover flies feed on nectar in any type of flower as do wasps.

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**Garden Quote**

*Flowers always make people better, happier, and more helpful; they are sunshine, food and medicine for the soul.*

~ Luther Burbank
August Gardening Calendar
By Donna Aufdenberg

Vegetable Gardening
- Keep the garden well-watered during dry weather and free of weeds, insects, and disease.
- Complete fall garden planting with cool season transplants early this month. Lettuce, spinach, and radishes can be planted in mid-August.
- Pick beans, tomatoes, peppers, and squash often to encourage further production.
- Plant a cover crop to enrich your soil. Annual rye, red clover and hairy vetch are good choices.
- Compost plant materials from the garden as crops are harvested. Avoid composting any plants that are disease or insect infested.

Outdoor Flowering Plants and Ornamentals
- Perennials that have finished blooming should be deadheaded.
- Keep weeds from making seeds now! This will mean less weeding for next year.
- During hot, dry weather, keep soil cultivation at a minimum. Loosening the soil under these conditions reduces water uptake and makes plants look much worse than before.
- Keep newly established plants well-watered when weather is dry.
- Check trees and shrubs that have been planted in recent years for girdling damage by guy wires, burlap or ropes.
- Don’t fertilize woody plants now. It stimulates late growth that will not have time to harden-off properly before winter.

Fruits and Nuts
- If your apples are lumpy they may have apple maggots. Be sure that fruit is not left lying on the ground because the maggots live in fallen apples and then pupate in the soil.
- Heavy rains at harvest can dilute the sugars in melons. Watermelons can re-concentrate the sugar if left for a few dry days however cantaloupes cannot do this.
- To reduce the number of pests on your fruit tree for the coming year, pick up and destroy all fallen fruit. Worms hide in the fruit and then pupate into the soil. They will be ready to lay eggs next year.

Lawn
- Apply insecticides this month for grub control on lawns damaged by their activity.
- Start thinking about lawn renovation the last week in August. Consider having a soil test to determine fertility needs.

Harvesting Watermelons
Harvest watermelon when several factors indicate ripeness.
- The underside ground spot turns from whitish to creamy yellow.
- The light green, curly tendrils closest to the melon turn brown and shrivel.
- The rind loses its gloss and appears dull and becomes resistant to penetration by the thumbnail and is rough to the touch.
- The melon yields a dull thud sound rather than a ringing sound when thumped. This is not always so reliable!
Book Review
by Marcy Wright, Master Gardener

Book: The Heirloom Life Gardener by Jere and Emilee Gettle
I have never thought about planting heirloom vegetables, but gardeners Jere and Emilee Gettle inspire me to do just that.

Jere’s passion for gardening comes out as he describes growing up in a homestead family, living off the land during the 1980’s, it was all about convenience. You really feel the uniqueness of this family. As Jere grows up, he sees historic varieties disappearing from the seed catalogs he spent so many hours dreaming over. There is a need to preserve history and at the age of 18, he starts Baker Creek Seed Company. Their first catalog was twelve pages long and offered seventy-five varieties of seed.

Feel the heat and see the sights as you travel with Jere through Mexico while hunting down roadside markets. Not able to speak Spanish, he still is able to communicate with the vendors’ his love for seeds. As he finds new vegetables, he hacks them open with a machete, scooping out the seeds to dry and save.

Not only do you get to know the Gettle’s on a personal level, you gain valuable insights and information on how to garden. Pick up tips on how to prepare the soil (they use fresh poultry manure). Learn about their organic weed control (mulch, mulch, mulch). Discover tidbits on when to harvest (when are Brussels sprouts ready?). Oh the advice!

Last but not least, Jere and Emilee have picked their fifty favorite vegetables and provide in-depth information on growing, pests, diseases, seed saving and cooking for each one. I can’t wait to grow some ground cherries! They sound fantastic.

I borrowed this book from a fellow gardener and have enjoyed reading it from cover to cover. I can’t wait to get my own copy. Not only do Jere and Emilee tell an amazing story but you gain beneficial, practical tips that you can easily incorporate into your own garden.

Hot Topic! Purslane
by Katie Kammler

Last summer I got a call about purslane. My first thought was the guy wanted to know how to get rid of it because it is a common garden weed in the summertime. Actually he wanted to know how to identify it so he could grow and eat it. I had no idea it was an edible plant so I will let you decide if you consider it a friend or foe in your garden.

This time of year, most people can walk in their garden or yard and find purslane (Portulaca oleracea). Purslane is a native of India and Persia and has spread throughout the world as an edible plant and as a weed. Purslane has fleshy succulent leaves similar to Jade plants and yellow flowers. The stems lay flat on the ground and radiate from a single taproot forming a large mat of leaves. It is closely related to moss rose, Portulaca grandiflora, grown as an ornamental. Purslane is an annual that will reproduce from seeds and from stem pieces. The seeds can remain viable in the soil for 40 years so this can either be depressing or exciting

............Continued on page 5
Magnesium sulfate cures blossom end rot on tomato. The question may sound like this, “My friend says Epsom salts (magnesium sulfate) cures blossom end rot in tomato plants because it adds magnesium...Is this true? “

Blossom end rot happens when the fruit or vegetable is produced without sufficient calcium to do so. The calcium may be available in the soil or even in the plant but it is not located in the fruit or vegetable while they form.

The reason for this is often weather related. If the plants were set out when the weather was too cool this could have set back plant development or they may not have produced an extensive root system. If the weather becomes too dry and water is not moving through the plant on a regular schedule then the calcium may not be getting where it needs to go. If the plants have high levels of nitrogen and produce excess foliage it can prevent calcium from moving to the blossom. If it is too humid (a real issue in Missouri) then the calcium may not be moving through the plant. If anything hurts the root system then uptake of calcium may not be happening.

Notice in each case I refer to calcium. This is the nutrient that is out of balance when there is blossom end rot, not magnesium. Sometimes blossom end rot will occur on the fruits or vegetables that develop first but will not persist thereafter.

In cases where magnesium sulfate (Epsom salts) have made a difference in plant health there has been a deficiency in magnesium, not calcium. The situations have also been on high production, commercial ventures where nutrients are leached out due to high irrigation schedules such as in sandy locations.

A further issue that can arise from using Epsom salts is using it in the form of a spray on foliage. This has been proven to cause leaf scorch and is not recommended.

The best solution for blossom end rot is to do a soil test. If this condition has persisted for more than one year then test for more than just N, P, K and Ca. Find out if there is an imbalance of another nutrient. An imbalance may be reducing root formation and causing delay in calcium movement through the plant.

Hot Topic! Purslane (cont’d from page 4)

by Katie Kammler

depending on your definition of the plant.

If you consider it a weed and are trying to control it, the number one thing is not to let it go to seed. It only takes three weeks for plants to get big enough to produce seed so you have a short window of time to control it. Also plants that are cut up by tilling or hoeing can re-root into the soil.

Purslane is not picky and will grow just about anywhere from the best garden soil to the poorest dry soil. It thrived last year in the drought because of its succulent leaves. The seeds are very small so they germinate best in the top ½ inch of soil and they like warm soil temperatures so mulching can help prevent germination.

Now back to the other side of purslane, its edibility. The preference is to eat fresh young plants, especially young leaves and tender stem tips. The taste is similar to watercress or spinach. It can be used in salads or sandwiches. It can also be steamed, stir-fried, or pureed. Now it is up to you to decide if you want to weed it or eat it!
When many of us picture the sunflower we picture a large seed head positioned alone on an 8 to 12 foot tall flower stem. Yellow rays surround a black center which produces large, edible seeds. This picture is of a version of the sunflower which has developed over time from the native sunflowers found in Missouri and other areas of America.

The Native Americans were the first to domesticate the sunflower relying heavily on it as a source of food from 900 to 1700 A.D. Some evidence even suggests it was used as far back as 3000 B.C. The Native Americans developed the plant into a single stem with black, white, red and striped seed colors. The plant was taken to Spain in 1500 A.D. and moved further into Russia around the 1700s where it was developed into an oil for consumption. From here it returned to the U.S. in the late 1800’s as the large flower heads we recognize today.

This originated with the varied native species that can still be collected today and planted for ornamental value. A few of the many species of Helianthus are shown here.

- **Helianthus ‘Loddon gold’** is a perennial with a unique yellow bloom. With a two foot stem the clump forming plant can be divided in autumn or spring. This plant likes hot weather.

- **Helianthus divaricatus** is a clump forming woodland perennial that has many small yellow blooms July to September. It reaches a height of six feet and spreads by rhizomes.

- **Helianthus debilis** is an annual that produces a five inch white bloom on a six foot stem preferring moist soils.

- **Helianthus annuus ‘claret’** is an annual with deep red petals and a six inch bloom reaching six feet in height in full sun. It produces no pollen.

- **Helianthus annuus ‘cocoa sun’** is an annual that reaches a height of one foot with bright yellow blooms and a dark center.

Sunflowers may be purchased from many sources. The following list is provided for your information and is in no way endorsed by Extension.

- [www.americanmeadows.com](http://www.americanmeadows.com)
- [www.easylivingwildflowers.com](http://www.easylivingwildflowers.com)
- [www.everwilde.com](http://www.everwilde.com)
- [www.prairienursery.com](http://www.prairienursery.com)
- [www.seedsource.com](http://www.seedsource.com)
- [www.wildflowerfarm.com](http://www.wildflowerfarm.com)

Vegetable Crop: Rhubarb
by Katie Kammler

Rhubarb is one of my favorite garden plants, probably because I really like to bake with it! Unfortunately my plant did not survive the drought last year so it is on my list of plants to purchase. Rhubarb is a cool season, perennial vegetable, grown for its leafstalks that have a unique tangy taste used for pies, baked goods, and sauces. Rhubarb was first cultivated in the Far East more than 2000 years ago for medicinal purposes. Only since the 18th century has it been grown for culinary use in the US and Britain.

Rhubarb will grow and produce in most soils, but grows best in fertile, well-drained soil with lots of organic matter. Since it is a perennial, it should be planted to one side or at the end of the garden so it is out of the way and not disturbed. It needs full sun and a southern exposure provides for an earlier crop.

Rhubarb is generally planted from a crown or division, not from seed. Planting in early spring is best, either when the plants are still dormant or when they are just starting to leaf out. It can also be planted in the fall after dormancy has set in.

Water regularly until it is established and also during dry periods. Rhubarb is a heavy feeder and benefits from regular fertilizer applications. Mulching helps control weeds and conserves soil moisture.

Leaf stalks should not be harvested the first year and only a few the second year. Once it is established from the third year on, it can be harvested in May to June. Stop harvesting leafstalks when the plant begins to produce slender stalks, a sign that its reserves are low. Never harvest more than 1/3 to ½ of the plant in order to preserve enough foliage to maintain the crown. Harvest by grasping each leafstalk near the base and pulling it slightly to one side or cut with a knife. The leaf portion needs to be discarded as it contains oxalic acid. Oxalic acid can build in the stems if there is frost damage in late spring. Only eat the stems if they are firm and upright, discard mushy, soft stems.

Generally there are not many pest problems associated with rhubarb. Japanese beetles like the leaves and crown rot can sometimes be an issue.
Crossword! Keep the Garden Going This Summer!
by Donna Aufdenberg

Working in the garden during the hot summer months is vital to keeping the garden going until fall. See if you can solve this crossword and come up with all the tasks that must be done to keep your produce and flowers coming!

Across:
1 - Water for garden plants
4 - Insects that transmit bacterial wilt to cucumbers and they come in spots or stripes
7 - Fruits and vegetables past their prime
9 - Tool used to eliminate weeds in the garden
11 - Analysis of garden soil
12 - Fungus, bacteria or virus causing abnormal plants
14 - Piled plant debris which is turned for speedy decomposition
15 - Ripe fruits and vegetables picked for consumption
16 - Shield shaped insect with sucking mouth parts that frequent plants in the cucurbit family

Down:
1 - Critters that chew on leaves or suck leaf juices
2 - Removal of weeds
3 - Removal of spent blooms
4 - A green manure
5 - A cool season group of plants that are commonly planted for the fall garden
6 - A woven material used to lightly cover plants to protect from frost
8 - Covering the soil with organic materials
10 - A source of N, P, K that keeps the plants in the garden growing
13 - Touring the garden and inspecting plants for insect and disease problems

Upcoming Master Gardener Trainings!
by Donna Aufdenberg

Master Gardener Training in Jackson, Tuesdays, Aug 27 - Nov 12 at 6:00 p.m. at Cape Girardeau County Extension. Contact Donna Aufdenberg at 573-238-2420 or aufdenbergd@missouri.edu

Master Gardener Training in Farmington, Wednesdays, Aug 14 - Oct 23 at North College Center, Mineral Area College in Park Hills at 6:00 p.m. Contact Katie Kammler at 573-883-3548 or kammlerk@missouri.edu.

Master Gardener Core Training in Poplar Bluff, Tuesdays, Aug 13 - Oct 29 at 5:00 p.m. at Butler County Extension Center. Contact Sarah Denkler at 573-686-8064 or denklers@missouri.edu

The Garden Spade
### August 2013

#### Upcoming Events

- **September 3 to October 29** - Master Gardener Core Training Continues; 6-9pm Cape Girardeau Co. Ext. Center in Jackson, MO
- **September 4 to October 23** - Master Gardener Core Training Continues; 6-9pm North College Center, MAC in Park Hills, MO
- **September 10, 17 and 24** - Master Gardener Core Training Continues; 5-8pm Butler Co. Ext. Center in Poplar Bluff, MO

#### August

- **2** - Parkland MGs 1st Monday at 6:30pm, Memorial United Methodist, Fmgn, MO
- **3** - Poplar Bluff MGs 1st Tuesday at 6:00pm, Butler County Ext Center
- **12** - Ste. Genevieve MGs 2nd Thursday, at 6:30pm, Ste. Gen. County Ext. Center
- **12** - Delta Area MGs 2nd Thursday at 7:00pm, Medical Arts Building, Sikeston, MO
- **16** - Cape Girardeau County MGs 3rd Thursday at 7:00pm, Cape County Ext. Center
- **23** - Perry County MGs 4th Monday at 6:30pm, Perry County Ext. Center

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If you have a horticultural related event for the calendar call 573-686-8064 or email it to Denklers@missouri.edu.
Editor’s Corner

The Garden Spade is published monthly by University of Missouri Extension staff for individuals and families living in Southeast and East Central Missouri. This newsletter is provided by your local extension council.

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We welcome and encourage Master Gardener groups and individuals to submit items to the newsletter. We encourage the submission of any news such as upcoming volunteer opportunities, community events related to gardening, warm wishes or congratulations to fellow gardeners. We also encourage Master Gardeners sharing experiences and writing articles on timely topics.

All entries into the group news sections must be received by 4:30 on the 15th of each month for the following month’s news.

Email News to: kammlerk@missouri.edu, denklers@missouri.edu, or aufdenbergd@missouri.edu

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