2009 Shownotes of Oklahoma Gardening

Produced by
The Department of Horticulture and Landscape Architecture
and
Agricultural Communications
Oklahoma Cooperative Extension Service

Kim Rebek
Host of Oklahoma Gardening

Please contact your local Oklahoma Cooperative Extension Service Office for more educational information on garden-related topics. If you need further information about this week's show, call (405) 744-5404 or visit our website http://www.oklahomagardening.okstate.edu. Thank you for your continued support!
Horticulture Vocational Program at the Cimarron Correctional Facility – In this segment Kim visits the Cimarron Correctional Facility in Cushing to learn about the Horticulture Vocational Program. The program is a year-long intensive introduction to diverse aspects of horticulture taught by OSU graduate Theresa Morris. Theresa selects class participants from a list of inmates who have completed their GED. She looks for participants that she feels have the most to gain from the program, both in terms of educational development as well as spiritual growth. The program is as much horticulture therapy as it is vocational training.

Throughout the course of the program, each student tends a vegetable plot, an ornamental bed and is allotted a bench in the greenhouse where they practice propagation techniques. The hands-on nature of the program gives inmates an outlet from the tension of everyday life in prison, as well as practical experience that they can someday use in the home or job setting. Kim visits with three different class participants to learn about each of the three planting areas tended by the students. She also visits the classroom to look at some of the design work being developed by class participants.

Much of the produce raised by students in the vegetable gardens is sold at the local farmer’s market. All proceeds raised through sales are given back to the community to help beautify the downtown area. Past donations have gone to support projects such as the Centennial Pocket Garden. Students also raise plants, produce and cut flowers to enter into the Payne County Fair. The many ribbons hanging on the classroom walls show just how much pride the students take in their work, and how successful they have been over the years.

Xeriscaping with David Hillock - In this segment Consumer Horticulturalist David Hillock joins us to introduce the concept of Xeriscaping. Xeriscape gardening, defined as quality landscaping that conserves water and protects the environment, is a concept that has been around since the early 1980s. The idea came from educators, professionals and city officials in the Denver, Colorado area in an effort to reduce the demand on the watering system during peak summer months. Today the concept takes on many forms such as Water-Wise Gardening, WaterSmart Gardening, etc., but the principles are all the same. Based on seven sound horticultural principles, the Xeriscape concept provides guidelines for the gardener that helps ensure a beautiful, thriving landscape that is not only less work in general, but also environmentally friendly.

Unfortunately there are a few misconceptions that exist, perhaps due to the meaning and pronunciation of the root word xeric. The term Xeriscape (pronounced zeri-scape not zero-scape) was derived from two terms, “xeric” referring to dry and “scape” referring to vista. One of the first misconceptions is Xeriscape means rocks and yucca or cactus and gravel (zero-scape). This misconception is somewhat ironic as the use of rocks and gravel may actually increase temperatures resulting in an increase of water use around nearby plants and an increase in the homes cooling costs.

A second misconception is that Xeriscape means dry landscaping only or “no” water. On the contrary, the design and use of appropriate irrigation is a very integral part of the concept. And the third misconception is that Xeriscape means no lawn. This is not true either, rather the use of practical turf areas and turf species is recommended. Less lawn does not mean lawnless.

The seven principles of Xeriscape landscaping are not new; they have been practiced in the landscape industry for decades. The concept of combining all seven guidelines into one effort toward landscape water conservation is what makes Xeriscape landscaping unique. The principles are given below:

1. Plan and design – planning and design is the foundation of any water-wise landscape.
2. **Consider improving the soil** – soil analysis will determine whether soil improvement is needed for better water absorption and improved water-holding capacity.

3. **Create practical turf areas** – practical turf areas suggest that turfgrasses be used as a planned element in the landscape. Avoid impractical turf use, such as long, narrow areas.

4. **Use appropriate plants and zone the landscape** – appropriate plant selection keeps the landscape more in tune with the natural environment. Both native and exotic plants make up the huge variety of plants available for Xeriscape landscaping.

5. **Irrigate efficiently** – by simply using efficient irrigation, you can instantly save 30 to 50 percent on your water bill.

6. **Consider using mulches** – use mulches in flower and shrub beds to increase water penetration during irrigations and prevent water loss from the soil through evaporation.

7. **Maintain the landscape appropriately** – appropriate maintenance preserves the beauty of the Xeriscape landscape plus saves water. Pruning, weeding, proper fertilization, pest control and irrigation system adjustments all conserve water.

Plants listed in this segment include Cock’s Comb (*Celosia argentea cristata ‘Cramers Burgundy’*), Russian Sage (*Perovskia atriplicifolia*), Lamb’s Ear (*Stachys byzantina*), Zinnia (*Zinnia elegans ‘Dreamland Mix’*) and Portulaca or Moss Rose (*Portulaca graniflora ‘Sundial Yellow’*).

Sincerely,
Kim Rebek
*Oklahoma Gardening Host*
Monrovia Nursery, New Plant Introductions – In this segment we visit with Nicholas Staddon, Director of New Plant Introductions for Monrovia Nursery. Monrovia is among the premiere nurseries producing quality container-grown plants for garden centers around the world. Founded in 1926, today Monrovia grows over 2,200 varieties and 22 million plants annually. Each season they offer new, improved varieties and we take a look at some of these varieties that are well suited for Oklahoma’s climate.

Some of the features that Nicholas looks for in improved cultivars include year-round, or multi-seasonal interest, multi-use plants, dwarf cultivars, bold, new foliage colors, and wildlife interest. The following is a list of the plants presented in this segment:

River Birch, Betula nigra; improved cultivar ‘Summer Cascade’
Dianthus (Pinks), Dianthus ‘Wink’
Barberry, Berberis thunbergii cultivars: ‘Crimson Pygmy’ ‘Rose Glow’ and ‘Golden Ruby’
Itoh Peony, Peonia hybrid ‘Julia Rose’
Weigela, Weigela florida cultivars ‘Magical Fantasy’ (variegated) and ‘Pink Poppet’
Snowberry, Symphoricarpos ‘Scarlet Pearl’

Monrovia Nursery Tissue Culture Facility – In this segment we visit the tissue culture facility at Monrovia. Tissue culture is a plant propagation technique that allows for the mass production of plant material under sterile conditions. Some advantages of tissue culture include:

- Cloning to produce exact copies of plants with particularly good flowers, fruits or other desirable traits.
- Rapid production of large numbers of mature plants.
- Propagation of plants that otherwise are difficult to reproduce.
- Ability to clean a plant stock of unwanted disease agents.

Lisa Butera, Tissue Culture Research Coach, joins us to discuss the process of tissue culture from the laboratory to the greenhouse.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, makes cauliflower with almonds.

Cauliflower and Almonds

A main dish recipe

- 3 tablespoons slivered almonds
- 2-1/2 pounds cauliflower, cut in florets
- 1/2 cup crem fresh or crema Mexicana*
- 3 ounces Swiss cheese, grated
- 1/2 teaspoon coarse salt
- 1/2 teaspoon pepper
- 3 tablespoons dry bread crumbs
- 2 tablespoons chopped flat leaf parsley

1. Heat oven to 350°F. Spread nuts on a rimmed baking sheet and bake until browned and fragrant, about 6 to 8 minutes. Remove from oven.
2. Preheat oven to 375°F. Spray a 2-quart baking dish with nonstick cooking spray.
3. Bring a large pot of water to boiling. Add cauliflower and cook until just tender, about 5 minutes. Drain and spread on paper towels to dry.
4. Place cauliflower in baking dish and gently toss with crem fresh, half the cheese, salt and pepper. Sprinkle with remaining cheese. Cover with bread crumbs and toasted nuts.

5. Bake 20 to 25 minutes, until crumbs and nuts are golden. Garnish with parsley and serve.

Serves 6.

*To make your own crem fresh, warm 1/2 cup heavy cream to 100°F. Add 1 tablespoon sour cream, buttermilk or plain yogurt (whichever is chosen must contain active cultures). Let the mixture sit at room temperature for at least 9 hours then refrigerate until needed.

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Modified from original source: http://whatscookingamerica.net
Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service 9/08
Van Duzer Winery – During our visit to Oregon, we stopped by Van Duzer Vineyards, owned by OSU alumni Carl and Marilynn Thoma. Nestled in the Willamette Valley, Van Duzer experiences the perfect climatic conditions for producing a world class selection of wines. The vineyard focuses on producing Pinot Noir and Pinot Gris cultivars, varieties well suited to the local climate. The staff at Van Duzer is proud to be certified by LIVE (Low Input Viticulture and Enology, Inc.), the Oregon organization which developed and evaluates vineyards and wineries against a rigorous set of international standards. The sustainable agriculture practices followed by Van Duzer originate in the notion that the highest level of fruit quality is achievable only through attention to soil health, biodiversity in the vineyard, and responsible pest and canopy management that relies on alternatives to off-farm inputs of chemicals and fertilizers.

We meet with Norbert Fiebig, vineyard manager, who explains the relationship between the local climate and topography, and the grapes grown at Van Duzer. He showcases cultural practices followed in the field to encourage full development of flavor in the grapes. Norbert also highlights a number of unique management and stewardship practices.

Winemaker Jim Kakacek walks us through the process followed to craft a fine wine, from harvest to bottling. He explains the use of several different clonal varieties of Pinot Noir, and how these are handled during fermentation. We look at each stage of production, and learn how different clonal varieties are mixed to produce a smooth, consistent flavor. There is certainly an intimate connection between the vineyard practices and the final flavor of each and every wine produced at Van Duzer.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, makes roasted salmon with vegetables.

Roasted Salmon with Vegetables

- 1 pound salmon fillet, skin removed
- 2 stalks celery, cut in 2-inch long pieces
- 1/2 medium yellow onion, sliced thinly
- 2 tablespoons vegetable oil
- 1/4 cup chopped onion
- 1/4 pound fresh mushrooms, quartered
- 2 medium red potatoes, cubed
- 1 pound fresh spinach, sliced thin
- 2 cloves garlic, finely chopped
- 1/2 cup white wine
- 1/2 teaspoon black pepper

6. Divide salmon into 4 portions, about 4 ounces each. Measure thickness of fillets.
7. Preheat oven to 400°F. Place celery and onion in a roasting pan and top with salmon fillets. Roast 10 minutes per inch of thickness.
8. Heat a medium-sized sauté pan over medium heat. When pan is hot add vegetable oil. Add chopped onion and mushrooms and cook until soft but not browned, about 5 minutes.
9. Add potatoes and continue cooking until potatoes are slightly browned and tender, another 12 to 15 minutes.
10. Stir in garlic, sauté 30 seconds.
11. Add wine and cook until pan liquids almost evaporate. Stir in spinach and pepper. Cook until spinach wilts, 1 to 2 minutes.

12. Place vegetables on plate and top with salmon. Reserve celery and onion from roasting pan for use in soup or discard.

Serves 4.

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Serves 4.

Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service 9/08

Vitamin A: 155%  Vitamin C: 75%  Folacin: 60%
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Integrated Pest Management with Dr. Tom Royer: Monitoring – In this segment we continue to explore aspects of Integrated Pest Management (IPM) with Entomology Professor and IPM Coordinator Tom Royer. Integrated Pest Management or IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices including cultural and physical techniques, biological control and chemical pesticides. IPM focuses on preventing pest problems before they occur. When pest problems do arise, management options focus on those with the least possible impact on the health of humans and the environment. In this segment, we look at scouting, monitoring and collecting information in the garden.

Integrated Pest Management utilizes many simple tools and techniques to manage pest, but requires knowledge of the landscape and the insects, diseases, plants and other life in the landscape. Knowing your plants and what they should look like when healthy is the first step to recognizing a problem in the landscape. Regularly looking at the plants, or scouting, to monitor their health can help you to identify problems early on. When scouting, it is also helpful to look for signs of insects and diseases present in the landscape.

There are some tools available that can help in monitoring for insect pests. These include traps and baited lures that are hung, for example, in fruit trees. Monitoring for insects helps to identify when control measures need to be taken. In this segment, Dr. Royer shares monitoring techniques to help you keep on top of problems in the landscape.

Use of Water in Japanese Gardens – In this segment we look at the use of water in Japanese gardens. Water dominated each garden we visited in Japan. And water is ever present in Japan, from the flooded rice paddy, to the mountain streams, to the surrounding oceans and seas. So it is no surprise that it should feature so prominently in the landscape. A less obvious reason for including water in Japanese Garden design is to create visual space. In Japan, the natural landscape is very dominating. The mountains are steep and close together, forcing people to live in the narrow valleys. The valleys are also home to dairies, rice fields and other farms, and so the people live in dense communities on the land that remains. By including a large sheet of water in the garden, designers create visual space, something that is very limited in the crowded cities. From a design standpoint, open space has many advantages, it provides a place to rest the mind and eye, open space also has the potential to anchor smaller components of the design into a unified whole. Open space also provides contrast to the more detailed surroundings. These same affects are achieved when using raked gravel to represent water. In fact, the simplicity of a dry pond is very powerful in creating open or empty space. Most dry gardens include a large expanse of raked gravel, the emptiness representing the Zen concept of mu or nothingness.

Water is often used symbolically in the landscape and typically represents an ocean or sea. One interpretation for the symbolic use of water as seas relates to ancient Shinto practices in which sacred ponds were created to communicate with those gods that came from over the sea, called tōrai kami. These sacred ponds or kami-ike still exist today. Some sacred waters are considered to hold special powers, such as the waters at Kiyomizu-dera, where we drank from the Waters of Happiness. Water is also used to metaphorically cleanse or purify the spirit, a practice that extends across many cultures worldwide. For this purpose, water basins are placed at the entrances to sacred spaces and offer a place for both physical and mentally or spiritually preparing oneself to enter the sacred grounds. At Buddhist Temples, these water basins are called tsukubai, and at Shinto Shrines they are called temizuya. A famous tsukubai at Ryoan-ji Zen Temple in Kyoto is a small stone receptacle carved with four kanji, or Japanese characters. The characters, when read together with the central square basin, translate literally as “I only know plenty”, a phrase that simply means “what one has is all one needs” a reflection of the anti-materialistic teachings of Buddhism.
Water in the landscape also has a very practical, aesthetic purpose in that it acts as a mirror, reflecting the rocks, trees and lanterns carefully placed above its surface. It also provides a stage for a magnificent collection of water loving plants. The principle players on this stage are the many varieties of iris and the water lilies we found blooming throughout the gardens.

Other inhabitants of the ponds are the famous Japanese koi. Koi are considered to be one of the strongest fish and are symbols of love and friendship. If you clap your hands while standing at the pond’s edge and the koi swim to you, you will be blessed with good fortune.

**Heian Jingu Shrine** – In this segment we visit Heian Jingu Shrine in Kyoto. The Shinto shrine was built in 1894 to commemorate the 1,100th anniversary of Heiankyo, the old name for Kyoto. The red torii, or gate, standing outside the temple is the largest in Japan. The shrine is dedicated to Emperor Kanmu, who moved the capitol to Kyoto and Emperor Komei, who was the last emperor before the capitol was moved to Tokyo.

The shrine houses four gardens surrounding the main buildings. The paths wind through the gardens in the style of a large strolling garden typical of the Edo period. The strolling gardens carry you along a path to a number of magnificent features. The south garden is a Heian style garden designed for Kyokusui-no-en, a garden party in which aristocrats would amuse themselves by composing Japanese poems. To celebrate this old tradition, the garden features seasonal haikus written about individual plants in the garden.

The east garden features a magnificent pond called Seiho-ike and a famous bridge, Taiheikaku. The garden is a glory in spring when the cherry trees come into bloom. Weeping Cherries (*Prunus subhirtella ‘Pendula’*) surround the pond and drape over the water. The trees are not pruned, but allowed to extend to great lengths. Often, the weight of the fruit-covered branches becomes too much for the tree to support. Large bamboo trellises are built to support the fruited branches.

The middle garden called Naka Shin’en was constructed in 1895. It contains the Soryu-ike pond crossed by a bridge called Garyu-kyou, the Sleeping Dragon Bridge. The stepping stones used in the bridge come from girders of Kyoto’s famous bridges from the 16th century. The pond is filled with water lilies and surrounded by a carpet of Rabbit-ear Irises (*Iris laevigata*).

**Japan Hosts/Collaborators** – In this segment we feature all the wonderful people who helped make our experience in Japan possible and memorable. Special thanks to Professor Paul Hsu from the Department of Horticulture and Landscape Architecture, and Dr. David Henneberry, Director of International Programs in Agriculture for supporting our participation in this program.

We all appreciate the generous hospitality of our hosts Mr. Yosuke Fujiwara and Mrs. Suiko Fujiwara, who own the guest house, and the many women who helped out in the kitchen. A great team of guides from the Kameoka Exchange Center joined us each day to help make our visit run smoothly. During our time together we came to know each of our guides individually and will remember them always.

Ms. Kiyomi Kojima, Manager at Kameoka Exchange Center
Mr. Yukio Hirai, General Manager at Kameoka Exchange Center
Mr. Masahiro Fujiki, Manager
Mr. Hirotsugu Ijiri
Mr. Fuminori Kikuchi
Mr. Munetsugu Fujita, Guide and Translator
Mr. Seiki Fujita, Guide
Miss Margaret Mann, Translator and Coordinator in Kameoka City
Mr. Hiroshi Kameda, Guide and Translator
Ms. Takako Kobatake Guide and Translator
In Tokyo Mr. Masanori Sato served as our guide and made sure we all made it to where we needed to be each day.

On several occasions we interacted with citizens of Kameoka. Some of which joined us for a garden tour, others worked alongside us in the gardens at the Kameoka Exchange. We learned a great deal from the Kameoka Youth Gardeners Association under the direction of Mr. Nonomura. Another special group of Kameoka citizens was the Rose Rock Group, which takes its name from Oklahoma’s famous rose rocks. The members of this group have all visited Oklahoma in the past.

Special thanks to the Mayor of Kameoka, Mr. Masataka Kuriyama, to Professor Ken Kawai of the Kyoto University of Art and Design for his engaging lecture, and to Ms. Yoshie Nishimoto for inviting us into her country home for lunch.

Part of our experience in Japan was to spend a day with a host family. We met our host families at a Garden party hosted by the Kameoka Exchange, where we had time to get to know one another while we sang songs and ate Japanese style barbeque. We give many thanks to all the families for inviting us into their homes.

**4-H Centennial Garden** – In this segment, Kim is joined by a team of 4-H students who helped design and install a very special garden in the studio. 4-H is a youth development program operated through the Cooperative Extension Service. To celebrate the 100th Anniversary of 4-H in Oklahoma, a group of 4-H students joined forces with the *Oklahoma Gardening* team to design and install the “4-H Centennial Garden”. This beautiful garden features native grasses, vegetables, a birthday cake-shaped water feature, and of course, clover! The students tell us all about the process they followed to design and install this wonderful garden. The team was led by Jessica Stewart, 4-H Coordinator of Special Programs and Promotions and included the following team members:

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<td>Emily Eller</td>
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A number of organizations supported this project. Special thanks to all who contributed time and materials:

- Atwoods of Stillwater
- Bustani Plant Farm
- Dixie Ferrell
- Hardscape Materials Inc.
- Johnson Seed Co.
- Oklahoma 4-H Foundation Inc.
- OSU Botanical Garden
- Oklahoma Horticultural Society
- Stillwater Steel and Supply
- Sunshine Nursery
Thank you to all the students who worked on this wonderful garden and congratulations for a job well done.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, makes a Japanese-style cucumber salad.

Japanese-Style Cucumber Salad (Sunomono)

- 2 teaspoons sesame seeds
- 2 English cucumbers
- 2 teaspoons salt
- 1/3 cup rice vinegar
- 1 tablespoon sugar
- 1/2 teaspoon low sodium soy sauce
- 1 teaspoon fresh ginger root, grated
- 1/4 cup shredded carrot

13. Toast sesame seeds in a 325°F oven until lightly browned. Set aside.
14. Slice cucumbers very thinly with a knife or mandolin. Place in colander over a bowl. Sprinkle with salt and mix well. Allow to sit 30 minutes.
15. In a small bowl combine vinegar, sugar, soy sauce and ginger.
16. Rinse cucumbers in cold water to remove excess salt. Drain well then gently squeeze in a clean towel to remove additional water.
17. Toss cucumbers with dressing. Cover and refrigerate at least one hour or until thoroughly chilled.
18. Serve in individual small bowls topped with shredded carrots and toasted sesame seeds.

Serves 6.

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*Sodium content does not reflect discarded salt included in soaking water. Actual sodium content will be less.

Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service
Establishing a New Vegetable Garden – This season we will feature fruit and vegetable production in the home garden. We will also manage our garden organically to help remove some of the mystery that surrounds that word “organic.”

Site Selection
The following is a list of considerations when selecting a site for the vegetable garden:
- Sun exposure: select a site that receives at least 6 hours of direct sunlight each day. Southern exposures are ideal for greatest sun incidence.
- Soil: Well-drained soils such as sandy loam provide ideal conditions for growing vegetables. Soil pH near 6.6 is optimal. Avoid steep slopes where erosion will be a problem.
- Air flow: avoid low-lying areas as these tend to collect cold air which slows germination and plant development in spring.
- Avoid placing a vegetable garden near walnut trees. Walnuts exude a substance called juglone from their roots which is allelopathic, meaning it can kill other plants. Tomatoes and other solanaceous plants are highly sensitive to juglone.
- Make sure the site is situated near a water supply.

Removing Vegetation
It is important to start with a clean slate when preparing a new garden bed. And this means removing existing vegetation and controlling weeds. Usually, this is a chore for the summer prior to planting. There are several methods available to kill off vegetation. The most common method is to apply an herbicide, but there are other non-chemical methods such as solarization and smothering.

Solarization is a simple technique that captures radiant heat energy from the sun uses that heat to kill seedlings and weed seeds, as well as some soil-born disease organisms. Sheets of plastic are used to trap the solar heat. Solarization is most commonly used to kill weed seeds in areas where the vegetative layer has been removed.

To smother weeds cover the soil with black plastic, or several layers of newspaper. I have also seen carpet or boards used for smothering.

You can combine solarization with other control methods. For example, you may choose to use an herbicide to make the initial kill, then solarize to control subsequent seedlings and kill seeds in the soil. Solarization can also be combined with the application of soil amendments and fertilizers. In fact, solarization can speed up decomposition of organic matter, releasing soluble nutrients into the soil.

Whatever method is used, it is ideal to control perennial weeds before establishing a new garden. It will be much easier to manage them before you have the area planted with vegetables.

Soil preparation
Once the vegetation is removed, till the soil to loosen it. This is a good time to add manure or other organic material. To preserve soil structure, avoid tilling when the soil is too wet. To determine if the soil is too moist for tilling, grab a handful of soil and squeeze it slightly. If it
sticks together in a ball it is too wet. If it crumbles easily it is ready.

How to Collect Soil for Testing
Soil tests should be included as part of garden preparation. It is easier to amend soils and add nutrients before we plant, rather than after. Soil tests collect information on soil nutrients and pH.

When collecting soil samples, you want to test areas with drastically different soil conditions separately. To get started you will need a tool for collecting small samples. A soil probe is a great tool for sampling, if you have one. You can also use a shovel or even a small bulb planter. You will also need a bucket for sampling. We want to obtain a representative sample for each area being tested. To do this, we need to collect a number of samples from across the entire area being sampled and combine them into a single, representative sample. In a large garden, we may take as many as 15 to 20 cores.

Using the probe collect a number of individual samples and mix them in the bucket. Make sure to use a clean bucket that does not have any cleansers in it. Many cleaners contain chemicals that could alter your soil test results. Take samples to a depth of six inches. I will mix these samples together, then fill the sample bag for analysis.

Sample bags are available at your county extension office, where soil samples may also be submitted. The samples are sent to the OSU Soil, Water, and Forage Analytical Laboratory for testing. Tests cost $10 each, and evaluate soil pH, nitrate nitrogen, phosphorous and potassium contents. You can also request micronutrient tests as well as organic matter content and other specific tests. Test results include fertilizer recommendations specific to the type of vegetation growing on the site. Be sure to mark the proper space on the sample label indicating the type of area sampled, such as turf or garden.

Extension Leaflet L-249 contains detailed information on collecting soil samples.

Types of Cropping Systems and Establishing Raised Beds – There are many ways to grow produce. Most common vegetable gardens grow rows of a single plant type. These are the vegetable gardens most of us grew up with and the common system on most commercial farms. However, there are many alternatives to traditional row systems that can help save space and increase the amount of produce you can produce in a small area. We will explore a number of these systems throughout the season including container gardening, vertical gardening and square-foot gardening.

The cropping system that we are using in our vegetable garden is an intensive bed garden, in which we have a series of mounded rows. This system is used to maximize planting area while still maintaining access to the planting beds for maintenance and harvest. Growing in mounded beds allows us to grow four or five traditional vegetable rows together in a smaller space. In essence, the intensive bed garden is a method used to avoid wasting space.

This series of graphics clearly demonstrate the advantage, in terms of space saving, gained by using the bed system over traditional rows. First we look at a traditional row cropping system, with the shaded areas representing the planted space. Rows are spaced according to conventional plant spacing recommendations. The second illustration shows a growing bed garden, again, the shaded areas show the space devoted to growing food. In the first illustration, only 32% of the area is actually devoted to producing crops, while in the garden bed system, 63% of the area is planted. This is a significant difference – we nearly double the amount of
space used to grow vegetables.

Our intensive garden will include a series of five foot beds with permanent aisles between the beds. The idea is that the planting bed is always a planting bed, and the aisle is always an aisle. We only walk in the aisles, and never in the planting bed. This keeps the soil in the planting bed from becoming compacted and in theory eliminates the need for tilling once beds are established. When working in our beds, we never step into the bed, but rather work from the aisles between.

The width of the bed can be narrowed to three or four feet if you find it difficult to reach the interior of the bed. Also, the length can be adjusted according to available space. Our beds are 25 feet long. This system can also be translated to raised beds if you have difficulty working on the ground. When establishing the width and length of your bed, it may be easiest to develop beds that have a total area of 100 square feet, such as 4 foot by 25 feet, or 5 feet by 20 feet. The reason for this is that most garden recommendations, such as fertilizer rates, are given in amounts for 100 square feet. One final consideration is to develop all of your garden beds to the same dimensions, as it will be easier to plan crop rotations and to share equipment, such as row covers, between uniformly sized beds.

As you can see, I am simply pulling soil up from what will become the aisles into the planting beds to create mounded, raised beds. One advantage of raising the planting bed above the surrounding soil level is improving the soil drainage. My goal is to raise the planting bed six to eight inches above the aisles. I want the aisles to be relatively flat for ease of walking and kneeling. The planting bed is mounded, or slightly rounded on top, rather than flat. This increases the surface area available to plant. A flat top system is sometimes used if the soil is very poorly drained. If this is a concern, you can create a ridge at the top of the bed, or a trench at the bottom of the bed to catch water. After several years of improving the soil through additions of organic matter, this drainage problem should correct itself.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, makes a ground beef and cabbage casserole.

Ground Beef and Cabbage Casserole

- 1 pound lean ground beef
- 1 medium onion, chopped
- 1 clove garlic, minced
- 1/2 teaspoon salt
- 2 cups no salt added tomato sauce
- 1/4 teaspoon cinnamon
- 1/4 teaspoon ground cloves
- 1/2 teaspoon dried thyme
- 1/2 teaspoon dried basil
- 4 cups shredded cabbage

19. Preheat oven to 350°F. Spray a 2-quart casserole dish and lid with non-stick vegetable spray.
20. Brown ground beef and chopped onion in large skillet. When almost browned, add garlic and continue cooking until meat is completely browned. Drain.
21. To meat mixture in skillet add salt, tomato sauce, cinnamon, ground cloves, thyme and basil. Bring to a simmer and cook 10 minutes.
22. Spread half the cabbage in prepared casserole. Top with half the meat mixture. Repeat layers. Cover casserole with lid and bake in preheated 350°F oven 45 minutes.

Serves 6.
Vegetable Garden Chores – For those of you ready to set out those early cool-season vegetables, we can start to sow a few seeds, especially in the southern part of the state. Now is a good time to seed carrots, chard, lettuce, peas, spinach and turnips. It is also time to start planting potatoes. You may wish to wait another week or two in cooler parts of the state before starting these seeds.

Sincerely,
Kim Rebek, Oklahoma Gardening Host
**Intensive Bed Gardening** – We will follow an intensive bed garden system in our vegetable garden. This system maximizes production space by placing plants closer together. This is not to say the plants are crowded, but rather given just enough room to thrive. We have already established a permanent bed-row system in which we have a series of mounded beds with walkways in between. The idea behind this is that we reduce soil compaction by walking only in the rows and never on the beds.

Another key component to intensive bed gardening is plant spacing. Traditionally, for example, we plant okra 18 inches apart in rows spaced 2 to 3 feet apart. This gives each plant a rectangle 18 inches wide by 2 or 3 feet long in which to grow. But we all know okra does not grow in a rectangular shape, so why do we need the extra space between rows?

If you remove the row space, and plant okra in 18 inch rows, spaced evenly apart, there is a much more efficient use of space; we use about half as much area. This is square-center plant spacing. The intensive bed system reduces wasted space even more by planting in a tighter pattern based on the actual shape of the plants, that is, a circle. Using equidistant spacing between plants and staggering the rows, we maximize the use of space as the rows are pulled closer together. However, the plant centers are still 18 inches apart; we have just removed the dead space at the corners of our square-center plant spacing. Generally, you can use the recommended in-row spacing as a base for equidistant plant spacing.

It’s one thing to proclaim we want to use an equidistant spacing with 18 inch centers; it’s an entirely different thing to actually set plants or seeds out at the proper spacing. There are two general methods for seeding, broadcast seeding or sowing seeds individually.

Broadcast seeding is useful for planting blocks of plants that take up little space, crops like carrots, radishes, beets, turnips and leaf lettuce. When we broadcast seed, we spread the seeds evenly over the bed allowing them to germinate where they land. It is a fairly quick technique and useful for those tiny seeds that are nearly impossible to pick up individually. But it can be difficult to obtain an even distribution. Often when we broadcast seed, we end up with clumps of plants here and there and empty space in between. Before you seed, you may wish to practice over a sheet. After a few tries, you will be able to obtain a fairly even distribution. And when you are ready to try your hand in the field, don’t underestimate the influence the wind has on where the seeds fall. Try to broadcast early in the morning when winds are at their slowest.

For larger seeds, we can set them individually in the garden exactly where we want the plant to grow. Such precision seeding requires two simple tools, a yard stick and a measuring tape. Lay the measuring tape along the length of the bed. This will be used to measure the distance between rows. The yard stick will be used to place the seed at the required plant spacing. I am going to demonstrate this with seed potatoes instead of actual seeds. The recommended plant spacing for potatoes is 12 inches. The first row will be planted 6 inches from each edge of the bed, which is ½ of 12, or the center of the plant circle. Likewise, the first seed will be set 6 inches from the edge of the bed. This allows a 12 inch circle in which the potato plant will develop. The next seed is set 12 inches from the first, and so on.

Logically we might think that the second row is started 12 inches from the first, but this is not
the case. Because we are using equidistant spacing, the second row is actually only 10 ½ inches from the first. However, we stagger the location of the seeds in the rows, so that the centers are still 12 inches apart. We continue on in this manner down the length of the bed. This same individual plant spacing method can be used for any large seeds like beans or squash, and is also the same method used for setting out transplants.

There are a number of benefits to using this close plant spacing.

*Resource Conservation.* By planting the crops closer together in a smaller area, we have less area that needs to be watered, fertilized or otherwise managed. We avoid wasting water and fertilizer that might fall on bare soil between plants or rows in a conventional row garden. And as there is less space to prepare, we can do the work by hand, eliminating the need for machinery and fuel, such as for tillage.

*Increased yields.* Research in intensive bed gardens has also showed an increase in yield per unit area. This is largely due to the closer plant spacing.

The close spacing of the plants results in a dense canopy covering the soil below. This has many positive effects similar to those gained from using mulches.

*Weed Suppression.* Like mulch that we lay down on the soil, the shade produced by the canopy can reduce germination of weed seeds and also competes with weeds for light, reducing weed problems.

*Reduced Evaporation.* The shade also helps to cool soils in the heat of summer and slows water evaporation.

*Effects of Wind.* We also find less wind lodging when plants are placed closer together because they can support one another. In a growing bed, only the outside rows are exposed to wind, which helps reduce the drying effect winds have on plants, again helping to save water.

*Reduced Soil Compaction.* Finally, the dense canopy helps protect soils from heavy rainfalls, which reduces soil compaction.

A few additional aspects of intensive bed gardening include three-season planting, in which we have spring, summer and fall crops in the same bed. I will be demonstrating this as we plant throughout the course of the year. Intercropping or planting two or more crops together in a space is another useful planting method that we will explore. Our small space garden will utilize intercropping to maximize the diversity of crops produced in a relatively small space. We will take a closer look at the small space garden in the coming weeks.

Intensive bed gardening can be applied on many different size scales. If space is limited, growing beds are the best way to get the most from the available patch of land. But even if you have ample space in the landscape, growing beds provide the most efficient and productive use of that space and reduce waste.

Like any vegetable garden, intensive bed gardening does take careful planning to optimize the use of space and organize your planting. Some wonderful resources to use when planning include OCES Factsheet HLA 6033 – Raised Bed Gardening, The Rodale Institutes’ “Getting the Most from Your Garden” and John Jeavons’ book “How to Grow More Vegetables”.
**Crop Rotation** – Garden planning is an important task – a well organized garden will allow you to make the most of the space you have. I have designed an intensive bed garden that includes crop rotation. The idea behind crop rotation is very simple – do not plant the same crop on the same piece of land each year. Instead we rotate crops to different areas of the garden over time. Rotations are generally based on the major crop families. These are:

- **Brassiceae** – broccoli, cabbage, kale, cauliflower, bok choi, brussel sprouts, radish and rutabaga
- **Solanaceae** – potato, tomato, pepper, eggplant and tomatillos
- **Curcurbitaceae** – cucumbers, squash and melons
- **Fabaceae** – beans and peas
- **Chenopodiaceae** – beets, chard and spinach
- **Apiaceae** – carrots, parsnip and parsley

Plants in different families have different nutritional needs and plants within a family tend to have similar cultivation needs. Growing plants from the same family together in one area of the garden makes sense for managing fertilization, pests and for general plant culture.

Because each plant family takes different nutrients out of the soil, it is a good idea to move the plant families from one area of the garden to another each year. Some crops, like cabbage and corn are heavy feeders. If you grow them year after year on the same patch of soil, they will quickly deplete the soil nutrients. Other crops, like legumes, fix nitrogen from the air and once the plants decompose, add more nitrogen to the soil than they remove. Moving crop families from one area of the garden to another each year helps in maintaining soil fertility.

Crop rotation also helps to manage insect and disease pests. In fact, it is one of the easiest steps that you can take in battling pests. Once they find a food source, they reproduce quickly and become problematic. When you plant the same crop in the same place year after year, you make it very easy for the offspring of that insect pest to find food, and so you have a big pest problem. But many insect pests have limited mobility. If you move their food supply even just several yards away, you make it more difficult for the offspring of the pest to find food. Many will die in the search.

Our garden includes five sections for rotation. Each section has three growing beds. Of the plant families that I mentioned, there are four that tend to take up the greatest amount of space in the vegetable garden. These are the brassicas, curcurbits, legumes and solanaceous plants. In designing the rotations, I assigned one of these four families to each section. I mentioned that I have five sections in the garden. The fifth section will be left fallow, meaning we will not grow a harvested crop. Instead, we will plant a cover crop in the fallow section to help rebuild soil fertility. We will look closer at cover crops later this season. I am applying crop location on a large scale. Crop rotation can be applied on a small scale as well as a large one. If my entire garden was this one bed, I could break it into four sections and rotate crops through each section.

Each of the five sections in our garden has been assigned to either be fallow or to one of the four major crop families. There are, of course, other plants that we want in our garden that do not fall into one of the four major families. Some of these, like lettuce, can fit almost anywhere in the planting scheme. Crops like onions and garlic have similar pest problems so we tend to move these through the garden rotation together the way we would plants from the same family. These extra crops can be added to the four sections of the garden based upon their season of production. For example, I found that okra and sweet potatoes fit very well into the brassica rotation because the brassicas are cool-season crops and the okra and sweet potatoes are warm-
season crops. This pairing allows me to grow spring and fall crops of the brassicas, with a summer crop of okra and sweet potatoes all in the same three beds. Available space will also guide you in finding room for these extra crops.

Designing a planting plan can be a bit of a challenge, especially when you plan for three seasons of production. To get started you want to:

- Make a list of the vegetables your family enjoys eating
- Determine how much of each crop you wish to grow
- Identify how much space the desired crops will require
- Determine what season each crop will be planted in – spring, summer or fall

Once you have this information, you want to lay out possible planting arrangements. I used index cards to start identifying possible arrangements. The cards were different sizes corresponding to the amount of space a particular crop would occupy. I also used a color coding system to indicate if it is a cool-season or warm-season crop. Then I could move the cards around in different possible planting arrangements. You can do the same thing using tracing paper laid over a drawing of the planting beds to find the best arrangement of plants your garden.

**Starting Seeds Indoors** – Many gardeners choose to start their own seeds at home, rather than purchasing transplants. The advantages include savings in cost, and also the availability of a much wider selection of cultivars. You can also time seed sowing according to your expected planting date so that transplants are ready when you need them. Of course, planting seeds and tending seedlings is also a great way to spend a winter day.

You can start seeds in flats purchased from a plant supply company or garden center, you can use expandable peat pots or you can use a variety of household items. When selecting a container to start your seeds, consider drainage. We do not want water sitting in the bottom of our container. We also want to make sure the container holds enough media that it will not dry out too quickly and will have plenty of room for roots to develop.

The potting media you use is also important. Often you can find a media labeled specifically for seeding. What we look for in our media is both good drainage and high water holding capacity. These things seem contradictory, but we want our soil to hold adequate moisture for seeds to germinate without drying out too quickly, but we also want excess water to freely drain from the medium.

Light is often a limiting factor with starting seeds indoors. To produce hardy seedlings, you need 12 to 14 hours of light per day. Natural lighting is generally not enough. Supplement natural light using a shop light with alternating cool- and warm-white fluorescent bulbs.

To plant the seeds, sow in rows 2 to 3 inches apart. Use a fairly tight spacing within the row. As a rule of thumb, sow seeds to a depth of approximately 3 times the diameter of the seed. Most seeds will germinate well at a temperature around 70 degrees F held constant during day and night. After germination, temperatures can be lowered according to the type of plant you are growing. Refer to OCES Fact Sheet HLA 6020, “Growing Vegetable Transplants” for ideal growing temperatures. For these tomatoes, a day temperature between 70 and 80 degrees F and a night temperature between 60 and 65 degrees F is ideal.

Managing water in seed trays can be tricky. Over-watering is a common problem. The seeds do not use much water until they have germinated and seedlings are actively growing. However, the seeds need moisture to germinate. Misting the soil until it is thoroughly damp is a good way
to provide moisture. Then, cover the seed tray loosely with plastic, checking soil moisture periodically. Remove the plastic once you see seedlings emerge.

Though fertilizer labels recommend weekly fertilizer applications, an application every two to three weeks is usually sufficient. The first application is not needed until seedlings are ready to be transplanted, two to three weeks after sowing.

**Cutting Back Ornamental Grasses** – Ornamental grasses should be cut back in late winter before new growth emerges. It can also be done in fall, but the seed heads provide nice winter interest, and some birds will also feed on the seed. To make the job easier, you can tie up the stalks with string. Depending on the size and density of the grass you may use any of the following tools: house scissors, shears or hand pruners. For smaller grasses, trim to about 2 to 3 inches from the ground; for larger grasses cut 6 to 8 inches from the ground.

**Vegetable Garden Chores** – We can continue to plant our cool-season vegetables including carrots, chard, lettuce, peas, spinach, turnips and potatoes. In the southern part of the state you can add beets and radish to your planting list as well. If you plan to start seeds indoors, now is a good time to get your peppers, tomatoes, eggplant and tomatillos started. In the cooler parts of the state you may wish to hold off another week or so.

Sincerely,

Kim Rebek
*Oklahoma Gardening* Host
**Oklahoma Gardening** Information Sheet (#3536)
OETA air date: March 7 and 8, 2009
OETA airtime: Saturday 11:00 a.m., Sunday 3:30 p.m.

**Apartment Gardening** – In this segment Kim shares ideas for gardening in small spaces. We have recently been looking at different planting options for growing vegetables in large spaces; however, even if you have only a small porch or patio available for growing plants, you can still produce large amounts of nutritious foods. When ground space is unavailable, you can grow a complete garden in containers. The size of the containers is important and will influence the plants you can grow. A window box is perfect for small vegetables like lettuce, radishes and spinach. A container about 6-10 inches is sufficient for smaller crops like these, as well as parsley, green onions and most herbs. You can add flowers to your plantings for extra color as well.

For larger plants we need to purchase good sized containers. Most vegetables will do well in a five gallon or larger container. You want to be careful and not oversize your container, making it too heavy to handle. Remember, no matter what container you choose, good drainage is important. If the container does not have drainage holes you will want to make some.

It is a good idea to use a soil-less media in your containers as these are not as heavy as field soil. They also have better drainage and water-holding properties than field soil. One of the great advantages of growing vegetables in containers is that you can amend the soil to suit the vegetable you are growing.

Kim demonstrates a method of growing potatoes in containers. Start with a large barrel filled with just about 12 inches of soil-less media. Set the potato seed pieces 5 to 6 inches deep in the soil. In the field, potatoes are hilled by pulling soil from the row up over the developing tubers. In the container, we will hill the potatoes by adding more soil to the container. Over time, we will need to add about 10 more inches of soil to the container, so be sure to size the container properly. A total depth of about 24 inches should be sufficient.

It is important to keep containers well watered. During the summer containers dry out quickly and will typically need watering every day. At planting time we do not need to water as frequently. While our seeds are germinating we want the soil to remain damp, but not too wet. Use your finger to check the soil and only water if it is starting to dry out. Once the seedlings emerge you may have to increase watering.

As you look for seeds and plants to grow in your patio vegetable garden, cultivar selection will become important. Most cultivars that will do well in your landscape will also perform well in a container. Look for plants that are more compact, for example the ‘Tom Thumb’ pea or the ‘Small Fry’ tomato.
**List of Vegetables for Container Gardening** (Source: Texas Agricultural Extension Service)

<table>
<thead>
<tr>
<th>Category</th>
<th>Varieties</th>
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</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>Patio, Pixie, Tiny Tim, Saladette, Toy Boy, Spring Giant, Tumbling Tom, Small Fry</td>
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<tr>
<td>Peppers</td>
<td>Yolo Wonder, Keystone Resistant Giant, Canape, (Hot) Red Cherry, Jalapeno</td>
</tr>
<tr>
<td>Eggplant</td>
<td>Florida Market, Black Beauty, Long Tom</td>
</tr>
<tr>
<td>Squash</td>
<td>Dixie, Gold Neck, Early Prolific Straightneck, (Green) Zucco, Diplomat, Senator</td>
</tr>
<tr>
<td>Leaf Lettuce</td>
<td>Buttercrunch, Salad Bowl, Romaine, Dark Green Boston, Ruby, Bibb</td>
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<tr>
<td>Green Onions</td>
<td>Beltsville Bunching, Crysal Wax, Evergreen Bunching</td>
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<tr>
<td>Green Beans</td>
<td>Topcrop, Greencrop, Contender, (Pole) Blue Lake, Kentucky Wonder</td>
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<tr>
<td>Radishes</td>
<td>Cherry Belle, Scarlet Globe, (White) Icicle</td>
</tr>
<tr>
<td>Parsley</td>
<td>Evergreen, Moss Curled</td>
</tr>
<tr>
<td>Cucumbers</td>
<td>Burpless, Liberty, Early Pik, Crispy, Salty</td>
</tr>
</tbody>
</table>

**Small Fruit Production** – Kim is establishing a number of small fruits in the studio garden. Many of the considerations regarding site selection and site preparation used in the vegetables are also applicable to fruits. For example a site with full sun and good drainage is ideal. Ready access to water for irrigation is also important. As with vegetables, avoid low-lying areas where cold air tends to settle. The soil is prepared in a similar manner, and we will also plant in raised, mounded rows. Raised rows are very important to promote soil drainage, especially for plants that are prone to root rots.

Kim demonstrates how to plant blueberries. The most important consideration when growing blueberries is soil. Blueberries require a low soil pH, and often we need to amend the soil to accommodate these plants. Because it can take a long time to obtain the desired pH, soil should be prepared six months to a year in advance of planting.

**Amending Soil** – Most fruits and vegetables perform best at a soil pH around 6.5, however, blueberries prefer highly acid soils with pH between 4.8 and 5.2. A soil test indicated the soil pH is 6.5, much too high for blueberries. Sulfur is needed to amend the soil and lower pH. The amount of sulfur needed to adjust pH will vary with soil type. To lower the soil pH by one unit, we need to apply 1 to 1.5 pounds of sulfur per 100 square feet in a sandy soil. In a loamy soil, we will need to increase that amount to 2 to 3 pounds per 100 square feet, and in clay soils, 3 to 4 pounds.

It takes several weeks for the pH to decrease as microorganisms in the soil oxidize the sulfur. It is best to make adjustments to pH six months to a full year before planting. It is also best to add small amounts of sulfur and then check soil pH, adding additional sulfur if necessary until the desired pH is reached. This will help you to avoid adding too much sulfur. Work the sulfur down into the soil. The easiest way to mix the sulfur in is to add it when you till.

Once we reach our target pH of 5.0, we will need to continue to check soil pH periodically, as pH can change over time. In alkaline soils, managing pH will be a constant battle.
**Planting Blueberries** – There are several types of blueberry available. The three basic types grown in Oklahoma include northern highbush, southern highbush, and rabbiteye. Northern highbush ripen in May and are best suited to the northern and central parts of the state. Southern highbush are a little more tolerant of heat and perform well throughout the state. Rabbiteye blueberries have greater heat tolerance and are suitable for culture in southern Oklahoma. It is important to plant more than one cultivar together for optimal fruit set; be sure the cultivars you choose bloom at the same time.

Like most plants, we want to set our blueberries at the same depth they are planted in the container. It is a good idea to dig your planting hole 2 to 3 times as wide as the container, or about 18 to 24 inches wide. Because blueberries are acid-loving, we place a half-gallon of peat moss in the bottom of the planting hole. Mix the peat in with the native soil around the plant. It can be difficult to evenly wet peat moss; wet it before you get started. This will help with more even settling once we back fill our hole and prevent air pockets.

If you are using bare-root plants make sure you keep the root system damp during planting. You can wrap them in a wet towel to keep them moist. On a windy day the roots can dry out very quickly. If you are using potted plants you will want to score the root ball to encourage outward rot growth. Fill the hole in and tamp slightly to remove air pockets.

Blueberries should be well watered as they establish. It is important to irrigate immediately after planting. Blueberries use a lot of water; they will need about 2 to 3 inches per week. Use acidic mulch such as pine bark to help conserve soil moisture. As the plants establish for the first two years we want all the energy to go into shoot and root development, so for these first two years we will be removing any flowers or fruit that set.

For more information on growing blueberries, check out Fact Sheet HLA-6248 “Blueberry Production for the Home Garden”.

**Horticulture Tips** – David Hillock, Consumer Horticulturist, gives us gardening tips for March.

**Flower and Garden**
- Divide and replant overcrowded, summer and fall blooming perennials. Mow or cut back old liriope and other ornamental grasses before new growth begins.

**Tree and Shrubs**
- Prune roses just before growth starts and begin a regular disease spray program as the foliage appears. (HLA-6403 & EPP-7607)
- Prune spring flowering plants immediately following their bloom period.
- Anthracnose control on sycamore, maple and oak should begin at bud swell. (EPP-7634)
- Diplodia Pine Tip blight control on pines begins at bud swell. (EPP-7618)
- Chemical and physical control of galls (swellings) on stems of trees should begin now. (EPP-7168 & EPP-7306)
- Dormant oil can still be applied to control mites, galls, overwintering aphids, etc. (EPP-7306)

**Turf**
- Broadleaf weeds can easily be controlled in cool-season lawns at this time with post-emergent broadleaf herbicides. (HLA-6421)
- Apply preemergent crabgrass control chemicals to cool- and warm-season turfgrasses (HLA-6421). Heed label cautions when using any weed killers near or in the root zone of desirable plantings.
March is the second best time of the year to seed cool-season turfgrass; however, fall is the best time to plant. (HLA-6419)

Cool-season lawns such as bluegrass, fescue and ryegrass may be fertilized now with the first application of the season. Usually, four applications of fertilizer are required per year, in March, May, October and November. (HLA-6420)

Begin mowing cool-season grasses at 1 ½ to 3 ½ inches high. (HLA-6420)

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, makes split pea soup (recipe).

### Split Pea Soup

- 2 tablespoons olive oil
- 1 small onion, chopped
- 2 medium carrots, chopped
- 2 stalks celery, chopped
- 2 garlic cloves, minced
- 1 pound (2 cups) dried split peas
- 1/2 teaspoon white pepper
- 8 cups fat-free, low sodium chicken broth
- 1 bay leaf
- 1/4 cup plus 2 tablespoons fat-free sour cream, optional
- Smoky paprika, optional

23. Pick through the peas, discarding any broken, discolored or shriveled peas and any foreign matter. Rinse well.
24. In large pot or Dutch oven, heat olive oil. Add onion, carrots, celery and garlic. Sauté until onion is translucent.
25. Add split peas and white pepper, stir 1 minute.
26. Add chicken broth and bay leaf. Bring soup to a boil then reduce heat and simmer 30 to 45 minutes, until peas are cooked through but not falling apart.
27. Remove bay leaf. Mash soup, if desired, using a potato masher, hand blender or regular blender to desired consistency.
28. Serve with a dollop (1 tablespoon) of sour cream and a pinch of smoky paprika if desired. Serves 6.

### Nutrition Facts, without sour cream

<table>
<thead>
<tr>
<th>Servings per recipe: 6</th>
<th>Calories 337</th>
<th>Calories from fat 45</th>
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<tr>
<td>% Daily Value</td>
<td>Total Fat 5g</td>
<td>Cholesterol 0mg</td>
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<tr>
<td>8%</td>
<td>4%</td>
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**Vegetable Garden Chores** –

*Selecting Appropriate Cultivars.* As you purchase seed for the garden, there are a few things to consider in selecting an appropriate cultivar. We all know there are many choices out there, but we want to find one that is right for our specific situation. As you make your selection consider:

- Eating Quality
- Pest and Disease Resistance
- Days to Maturity (quick varieties if using 3 season planting or wish to extend harvest)
- Storage
- Hardiness
- Convenience: self-blanching cauliflower, non-staking peas or tomatoes
- Adaptability – think clay soils!

Sincerely,
Kim Rebek, *Oklahoma Gardening* Host
Transplanting Cole Crops - In this segment Kim sets out broccoli transplants. Cole crops are great cool-season vegetables. These include broccoli, cabbage, cauliflower and bok choi. As cool-season crops, these plants are very cold hardy, but do not tolerate heat well, and so we need to get our plants in early and push a crop through before high temperatures settle in. High air and soil temperatures cause a harsh flavor to develop. The plants develop best between 60 and 70 degrees Fahrenheit, and the quality declines around 80 degrees. One way to grow a fast crop is to select fast maturing cultivars.

You can plant cole crops from seed or you can transplant seedlings in the garden. To plant from seed, you ideally want to sow seeds in the first two weeks of March. Transplants are best set out during the last two weeks of March. If starting your own seeds, cole crops need about 4 to 6 weeks from seeding until the plants are ready to transplant. Plant spacing is 18 inches. In our intensive bed gardens, plants are set in staggered rows that are spaced 10 ½ inches apart. This still gives each plant an 18 inch circle in which to develop.

We need to take measures to manage cutworms at the time of planting. Cutworms are moth larvae that feed on the plant stems at the soil surface, often chewing through the entire stem and removing the plant tops. Cutworms feed at night and can wipe out an entire row of plants overnight. Young transplants can be protected from cutworms by placing paper ‘collars’ around the base of the plant stems. The cutworms feed right at ground level. Collars create a barrier between the worms and the plants. Materials that work well for collars include toilet paper or paper towel tubes, paper cups or strips of newspaper.

To make your collar effective, it needs to extend one to two inches above and below the soil surface. Slip the collar over the stem, settle your plant at the proper depth in the planting hole, and hold the collar in place as you fill the holes. Another method gardeners use to deter cutworms is to place a stick or straw that is pencil-width next to the plant stem. The cutworms need to encircle the stem completely to feed and the stick prevents their feeding.

For more information on growing cole crops turn to OSU Fact Sheet HLA-6017 Growing Broccoli, Cauliflower, and Cabbage.

Planting Strawberries - Strawberries are a relatively simple fruit to grow in the home garden. They can be grown successfully throughout the state. Of course, the plants will require weekly irrigation when the rains subside, so be sure the location you choose is accessible to water. Also look for a spot that receives full sun, as shade can reduce fruit set. Strawberries have several diseases in common with other berry plants as well as crops like tomatoes, potatoes and peppers. Be sure the site you select has not been used for any of these crops for several years.

Strawberries are grouped into three general categories. The first are June-bearing strawberries, which produce a single crop from May through mid-June in Oklahoma. They are the best adapted for Oklahoma and are available in early-, mid-, and late-season cultivars. Everbearing strawberries produce berries from May to mid-June, and again in the fall. Overall production may not be as high as that of June-bearing varieties. The final type of strawberry is called day-neutral. These produce fruits all season, but they are sensitive to heat and are not recommended for Oklahoma.
When selecting cultivars and purchasing plants, be sure to buy certified, disease-free plants from a reputable supplier. Planting more than one cultivar with different maturation times is a great way to extend the harvest season.

Strawberries can be planted in a raised bed, in mounded rows or simply in beds in the ground. However, when you raise the soil, you improve drainage. Mix a thick, 3 or 4 inch layer of compost into the soil to add organic matter. As you prepare the bed, limit the width to around 3 or 4 feet so that you can easily reach in to harvest. If you are planting multiple rows of strawberries, leave 4 feet between the rows.

Strawberries are planted in February or March, but you want to watch the weather. Avoid planting just before a cold spell. There are a number of planting systems that can be used for growing strawberries, but in the home garden, the most common method is the matted row system. This system uses wide plant spacing and relies on the strawberry plants ability to send out runners and establish new plants as a means of filling the bed. As strawberries grow, they send out runners along the soil surface. New plants develop along these runners, take root and produce new plants. This is how the plants will spread throughout our beds.

The plants that we set out are rooted runners that have been removed from a mother plant. Strawberry plants are typically sold bare-root, and we need to protect them from drying out as we plant. You can keep them in a bucket of water or wrap them in a damp towel. Before setting out the plants, remove all but the three strongest leaves. Space the plants 1 ½ to 2 feet apart in the row. We will allow the runners to grow in all directions and fill the bed. It seems like a lot of space to fill, but a single plant can produce 30 to 50 runners in a season.

The depth at which we place the strawberry is critical. If it is set too deep, the crown will rot, too shallow and the roots will dry out. Set the plants so that the crown, which is the point where the leaves arise, is level with the ground surface. We also want to spread the roots out as we plant. If the roots are long, you may choose to trim them with a scissors or sharp knife.

One way to set strawberries at the correct depth is to dig wide holes and mound soil piles in the center of the hole. Adjust the height of the mound so that the plant crown is at the surface level. Spread the roots over the mound and refill the hole with soil. Hold the plant at the crown as you work, making sure it remains level with the soil line. Double check the planting depth when you finish. Once you have finished setting out all the plants, water each one in well with at least a pint of water a piece.

Strawberries are shallow-rooted and need one inch of water each week. Mulching around plants will help retain soil moisture and also combat weeds. June-bearing berries will not produce a crop until the summer following planting. If flowers appear, we will need to remove them by hand. We want all of the plant’s energy to go into vegetative growth and not fruiting. The everbearing plants should produce a fair crop the first fall.

OSU Fact Sheet [HLA-6214 Growing Strawberries in the Home Garden](http://www.extension.oregonstate.edu) provides more information on strawberry production.

**Plant a Row for the Hungry** – In this segment Kim meets with Jeff Lowenfels, member of the Garden Writers Association of America and founder of the Plant a Row for the Hungry Program. The program follows a people-helping-people approach to target hunger and malnutrition.
Gardeners are notorious for growing more produce than they can consume. *Plant a Row for the Hungry* encourages gardeners to plant an extra row of produce and donate their surplus to food banks, soup kitchens and other service organizations.

Jeff started *Plant a Row for the Hungry* in his newspaper column in Anchorage, Alaska, asking gardeners to plant a row of vegetables for Bean’s Cafe, a local soup kitchen. Since then, *Plant a Row for the Hungry* has grown exponentially, with over 27,000 volunteers collecting well over 1 million pounds of food annually! Jeff joins us to share his story of how *Plant a Row for the Hungry* began.

Several food banks around Oklahoma have joined the cause and started their own *Plant a Row for the Hungry* campaigns. The Lawton Food Bank accepts donations Monday through Friday between 9 a.m. and 4 p.m. or by appointment; you can contact Jeri Mosiman at 580-353-7994 for more information. The Community Food Bank of Eastern Oklahoma is another participant. You can visit their website at [www.cfbeo.org](http://www.cfbeo.org) or contact Ken Bacon at 918-585-2800 ext. 122 for more information on donating to that organization. Also, the Regional Food Bank of Oklahoma in Oklahoma City is another great resource. Look for information on their website at [www.regionalfoodbank.org](http://www.regionalfoodbank.org) or call 405-972-1111 to find out how you can contribute.

Everyone can make a difference to a hungry family by simply planting one extra row in their garden. To find out how you can start a campaign in your own community, visit the Garden Writers Association *Plant a Row for the Hungry* website at [http://www.gardenwriters.org/gwa.php?p=par/index.html](http://www.gardenwriters.org/gwa.php?p=par/index.html). Be sure to let all of us here at *Oklahoma Gardening* know what you are doing to make a difference for the hungry in your community.

**Iron Chlorosis** – David Hillock, Consumer Horticulturist, tells us how to treat iron chlorosis. Iron chlorosis symptoms show up as the yellowing of the leaf between the veins, veins remain green, on broadleaf trees like pin oak. Leaves can also turn white and edges may become scorched and turn brown. This usually occurs in high pH soils, above 7.0. It may affect one leaf, a branch, half the crown or the whole tree.

Other factors may cause yellowing such as insect or disease, herbicide damage, or overwatering. Some cultivars are yellow. Rule out other possibilities first. Test soil pH. Manganese deficiency can also look the same. Treatment for suspected iron chlorosis can rule out other suspects.

The best approach is prevention, planting species that are not susceptible to iron deficiencies in high pH soils. Culture is also important, avoid saturated soils and aerate compacted soils.

There are several treatment methods –

1. soil application of elemental sulfur combined with iron sulfate
2. soil application of iron chelates
3. foliar sprays with iron sulfate or chelated iron
4. trunk injections

A soil application is probably the preferred method. Instead of just treating the symptoms you are treating the problem by altering the soil pH. Soil applications can last several years, are relatively inexpensive, simple, and do not injure the plant. It is slower to respond than the other methods and can be labor-intensive. In bare soils the elemental sulfur-iron sulfate mix can be applied to the soil surface and watered in. In turf-covered areas drill holes 1 to 2 inches in
diameter, 12 to 18 inches deep and 18 to 24 inches apart from about 3 feet from the trunk to a few feet beyond the drip-line of the tree and apply mixture to holes.

Foliar sprays are a simple procedure and provide a quick response but are only temporary, lasting only one season, can be spotty if complete coverage is not achieved, may cause temporary leaf burn, and can be expensive.

Trunk injections last several years and can be moderately expensive. It does result in an injury to the trunk which is generally best to avoid if possible. This procedure is somewhat complicated and results can sometimes be variable.

**Vegetable Garden Chores** – This week in the vegetable garden we will continue planting out our cole crops. We can also start to plant our sweet corn in the warmer areas of the state. If you plan to start your own cucumber and summer squash transplants you will want to get those seeds started indoors as well.

Sincerely,
Kim Rebek, *Oklahoma Gardening* Host
Planting Tomatoes with Walls-o-Water – In this segment Kim demonstrates how to set up walls-o-water plant protectors to extend the tomato-growing season. Typically we wait until the average date of the last frost before we set out our tomato plants, which in Stillwater is around April 15. The problem with planting them out any earlier is that the plants are sensitive to freezing temperatures and can be killed by even a light frost. But if we take measures to protect the plants from frost, we can set them out before the threat of frost has passed.

One way to protect plants is to use Walls-o-Water, which can be purchased at many garden centers or ordered on-line. Walls-o-Water are plastic plant protectors that moderate the temperature around the plant and prevent freezing. Each one has a series of vertical cells that are hollow. We will fill these cells with water that will absorb heat during the day and release it during the night, keeping our plants warm, even when the temperature drops below freezing. You can use these to start tomatoes, peppers, squash, or other plants 4 to 6 weeks earlier.

1. Set Walls-o-Water up where you will plant a full four to six weeks before the last normal frost date for your area. You can use an empty 5 gallon bucket to hold the walls open as you set them in place. Bury the bottom a little bit in the soil to keep it stable.

2. Set up one week before transplanting to warm the soil. This is very important. We all understand that if you transplant into cold soil you may easily stunt the plant's development.

3. Fill the tubes two thirds full and remove the bucket. The tubes will fold together at the top like a teepee. This will trap heat inside the wall-o-water. Our plants will grow inside this teepee, nice and warm both day and night. There is plenty of light penetration through the plastic.

4. Use small, 3-4 inch plants as they will have less trouble with transplant shock.

5. After several weeks the plants will start to push through the opening at the top. That is when we fill the Wall-o-Water completely, which will cause it to stay open.

6. Keep them on until 30 - 45 days after the last normal frost date. You do not need to worry about the plants overheating inside the wall-o-water, because as the temperature rises, they have a cooling effect.

There are many different materials that can be used in a similar manner to walls-o-water. Individual plant protectors, or cloches, have long been used to protect plants from frost. Traditionally, cloches were glass bell jars placed over the plants, but glass does not stand up to hail, can be expensive, and is easily broken. Instead, just about any plastic container around the house will work. I remember a farmer near my house growing up that had a field of milk jugs every spring. I always thought it looked so funny – but I guarantee he had the first tomatoes around. Two liter soda bottles or juice jugs also work well. When using a bottle with a cap, it is best to cut the bottom off the container, and place it cap-side up over the plant. This leaves us the option of removing the caps during warmer days to provide a little ventilation, and returning the caps at night to trap in heat. Plastic cloches are not going to be quite as insulating as the walls-o-water, but they can still give you a three or four week jump start on your tomatoes.
Whichever method you choose, be sure to set the plants at the appropriate spacing in the field. Our tomatoes will be set at 2 foot centers. Use a dark mulch to conserve soil moisture and also to help increase soil temperatures, we all know that dark colors hold heat. As temperatures rise in the summer, we can cover the dark mulch with straw to reflect light and heat.

**Plant Highlight: Flowering Fruit Trees** – In this segment Kim showcases a pair of magnificent flowering fruit trees. There are many flowering plums used ornamentally in the landscape, but fruit-bearing plum trees (*Prunus domestica*) also put on a dramatic and aromatic floral display. These trees belong to the rose family, and you can certainly see the resemblance between the flowers. Plums put on quite a show – loading their branches in early to mid-March. One of the challenges of growing plums is that they bloom so early in the season that we risk losing all of our fruit to a frost.

Peaches are another beautiful bloomer. Peaches (*Prunus persica*) produce magnificent pink blooms in early to mid-March. Like the plum, we risk losing these blooms to frost. If you grow peaches or plums, watch the weather carefully in early spring. If frost threatens, take steps to protect the blooms. The peach tree in our studio was too large to cover entirely, so we covered individual branches with sheets to protect them from the coming frost. Cloth drop clothes or frost blankets are also effective. Plastic is not as insulating as cloth sheets. Incandescent light bulbs can also be used to generate a small amount of heat that can be trapped beneath the coverings. Be sure to secure the covers in such a way as to avoid contact with the light source. Place the lights at the ground, as hot air rises.

**Oklahoma Botanical Garden and Arboretum** – This season *Oklahoma Gardening™* will showcase affiliate gardens of the Oklahoma Botanical Garden and Arboretum (OBGA), a statewide network of gardens, arboreta and parks. Oklahoma is one of only two states that have a statewide arboretum system. The OBGA was created in 1991 with the goals of expanding public awareness of horticulture and landscape architecture, to develop educational programs for Oklahomans of all ages, to conduct research, teaching, and extension programs, to improve educational opportunities in plant sciences and related areas, and to preserve native and adapted plant material through its network of affiliate gardens.

**Myriad Botanical Gardens and Crystal Bridge** – The first OBGA affiliate garden we feature is Myriad Botanical Gardens and Crystal Bridge. Garden Manager Allen Storjohann leads us on a tour through the Crystal Bridge Tropical Conservatory, an indoor tropical paradise nestled in downtown Oklahoma City. With over a 1,000 species in the collection, the Crystal Bridge houses plants from every continent except Antarctica! Two distinct habitat regions, the Tropical Rain Forest Zone and the Dry Tropical Zone showcase unique plants from very diverse locations across the world. The extensive plant collections include outstanding representatives of several fascinating plant groups including palms, bromeliads, orchids, cycads, euphorbias and gingers. Surrounding the conservatory are seventeen acres of brightly colored, diversely landscaped gardens. Myriad Gardens hosts many events throughout the season. Be sure to visit their website at [www.myriadgardens.com](http://www.myriadgardens.com) to find out what is happening.

**Plants at Myriad Botanical Garden:**
- Madagascar Tree Palm, *Pachypodium lamerei*
- Bottle Palm, *Hyophorbe lagenicaulis*
- Jamaican Poinsettia, *Euphorbia punicea*
- Old Man’s Palm, *Washingtonia filifera*
Variegated Pineapple, *Ananas comosus* 'Variegatus'
Dwarf red Pineapple, *Ananus lucidus*
Citrus, *Citrus* species
Banana, *Musa* specceis
Coconut, *Cocos nucifera*
Star Fruit, *Averrhoa carambola*
Papaya, *Carica papaya*
Autograph Tree, *Clusia rosea*

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, makes a tomato soup with blue cheese.

**Tomato Soup with Blue Cheese**

- 1 tablespoon extra virgin olive oil
- 1/2 cup chopped onion
- 1/2 cup chopped celery
- 3 cups (1 28-ounce) can crushed tomatoes, undrained
- 1 can (14.5 ounces) fat free, low sodium chicken broth
- 1/4 cup dry red wine or additional broth
- 1 teaspoon sugar
- 1/4 teaspoon dried thyme
- 1/2 cup half and half
- 2/3 cup crumbled blue cheese, divided
- 1/8 teaspoon ground black pepper

29. Over medium heat brown onion and celery in oil for 10 minutes, stirring often.
30. Add crushed tomatoes, broth, wine, sugar and dried thyme. Bring to a boil, reduce heat and simmer, uncovered, 20 minutes.
31. Stir in half and half and 1/2 cup blue cheese. Keeping heat low, heat soup but do not boil.
32. To serve, divide into bowls and top with remaining cheese and a sprinkle of black pepper.

Serves 6.

**Nutrition Facts, with wine**

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<tbody>
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<tr>
<td>Vitamin A: 23%</td>
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<td>Calcium: 16%</td>
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</table>
**Vegetable Garden Chores** – This week in the vegetable garden we can continue to plant our cole crops and sweet corn. We also want to continue to start our cucumber and squash seeds indoors or in a cold frame.

Sincerely,

Kim Rebek  
*Oklahoma Gardening Host*
Plant Highlight: Evergreen Trees – Evergreen trees provide the backbone of the landscape. They are often used as a backdrop to gardens, they provide year-round structure in a planting bed, and when all else in the garden has succumbed to winter, they continue to shine. In this segment, Kim looks at several noteworthy evergreen trees in the OSU Botanical Garden’s arboretum.

Arborvitaes are very common evergreen trees in the landscape. One arborvitae of particular interest is the cultivar called ‘Green Giant’. ‘Green Giant’ came out of the National Arboretum’s plant breeding program and is noteworthy not only for its size, but also for its adaptability. ‘Green Giant’ is tolerant of a wide variety of soils and is hardy in USDA Hardiness Zones 5 – 7. It is virtually maintenance free, as well as pest and disease-resistant, and the tree also does not have problems with deer grazing. ‘Green Giant’ grows rapidly, adding 1 – 2 feet per growing season; you can expect it to grow to about 30 feet in 30 years. It is used as an evergreen screen, hedge or as a single specimen.

Spruce trees are very challenging plants to grow in Oklahoma, but one that has proven to be very successful is the columnar spruce cultivar ‘Cupressina’. The species name of this spruce is Picea abies, it is a form of Norway spruce. It has been selected for its tight, narrow growth habit, which allows us to plant it in spaces that would be too narrow for pyramidal evergreens. Of course, the tree can still reach a rather large size of up to 30 feet, with a 6 to 10 foot spread. This is a selection for the more northern parts of the state, as it is hardy from zone 7 down to zone 2, but will be heat stressed farther south.

The Arizona Cypress (Cupressus arizonica) is another pyramidal evergreen, this is one with a stouter appearance. The trees have a large diameter, reaching up to 30 feet when mature. Arizona Cypress is heat and drought tolerant, making it a good choice for Oklahoma landscapes. The plants are native to North America and are hardy to zone 7. Most of the cultivars available have a bluish hue to them, making them very attractive. When placing the Arizona Cypress in the landscape, be aware of the mature size and give it plenty of room to spread out.

China Fir (Cunninghamia lanceolata) has spiky needle-like leaves. The leaves are arranged in a very interesting spiral around the stems with an upward arch. On young trees, the brown bark exfoliates in strips, revealing a reddish-orange inner bark, which is quite attractive. The tree itself has the typical, pyramidal shape of many evergreens, but the branches of older trees droop somewhat. The trees tend to be multi-stemmed and sucker up from around the base. You can remove the suckers periodically to maintain a cleaner look.

Despite its name, China Fir is actually related to Bald Cypress, and not fir trees. China Fir is something of a novelty plant for Oklahoma; we certainly do not often see these in the landscape. I find it to have a very exotic appearance that is quite appealing. China Firs are hardy to zone 7, and so their use should be restricted to the southern half of the state. If you plant the tree too far north you risk it dying back to the ground from a hard freeze. It is a good idea to plant the trees in a location that is sheltered from the wind. It requires part shade to full sun conditions and well-drained slightly acidic soils. The tree is fast growing and fairly drought tolerant.

Iron Chlorosis – David Hillock, Consumer Horticulturist, tells us how to treat iron chlorosis. Iron chlorosis symptoms show up as the yellowing of the leaf between the veins, veins remain green, on broadleaf trees like pin oak. Leaves can also turn white and edges may become
scorched and turn brown. This usually occurs in high pH soils, above 7.0. It may affect one leaf, a branch, half the crown or the whole tree.

Other factors may cause yellowing such as insect or disease, herbicide damage, or overwatering. Some cultivars are yellow. Rule out other possibilities first. Test soil pH. Manganese deficiency can also look the same. Treatment for suspected iron chlorosis can rule out other suspects.

The best approach is prevention, planting species that are not susceptible to iron deficiencies in high pH soils. Culture is also important, avoid saturated soils and aerate compacted soils.

There are several treatment methods –
1. soil application of elemental sulfur combined with iron sulfate
2. soil application of iron chelates
3. foliar sprays with iron sulfate or chelated iron
4. trunk injections

A soil application is probably the preferred method. Instead of just treating the symptoms you are treating the problem by altering the soil pH. Soil applications can last several years, are relatively inexpensive, simple, and do not injure the plant. It is slower to respond than the other methods and can be labor-intensive. In bare soils the elemental sulfur-iron sulfate mix can be applied to the soil surface and watered in. In turf-covered areas drill holes 1 to 2 inches in diameter, 12 to 18 inches deep and 18 to 24 inches apart from about 3 feet from the trunk to a few feet beyond the drip-line of the tree and apply mixture to holes.

Foliar sprays are a simple procedure and provide a quick response but are only temporary, lasting only one season, can be spotty if complete coverage is not achieved, may cause temporary leaf burn, and can be expensive.

Trunk injections last several years and can be moderately expensive. It does result in an injury to the trunk which is generally best to avoid if possible. This procedure is somewhat complicated and results can sometimes be variable.

**Oklahoma Botanical Garden and Arboretum Affiliate Garden Showcase: Cann Memorial Garden** – In this segment Kim continues to feature the OBGA affiliate gardens with a visit to Cann Memorial Garden in Ponca City. Jim Eck, long-time park superintendent, shows us around this magnificent garden. Cann Memorial Garden is a 10 acre estate located in the heart of Ponca City at the Junction of Highway 77 and Grand Avenue. The estate was given to the City of Ponca City by Elsie Cann Brown, daughter of L. A. and Mary Cann in August 1975, in memory of her parents. Lester Cann was an early pillar of the community serving over 25 years as a commissioner and City Manager. The estate was donated with the stipulation that it would be maintained as a memorial garden for use of the people of Ponca City and as a meeting place for the numerous Garden Clubs. A two story farm house built in 1908 has been refurbished with a beautiful shaded patio area with over 2,500 feet of brick walkways. There is also a formal garden containing several hundred varieties of annuals and perennials planted in unique color displays. The garden is a favorite wedding site. There are over 70 species of trees that have been planted since 1980 and more to be added in the future. The Master Gardeners have developed a map to help visitors identify trees. Maps are available in a mail box on the side of the shed by the pond and also at the entrance by the parking lot. Gardens open daily, home tours by appointment. Free Admission. Be sure to visit the gardens during the Ponca City Herb Festival scheduled for
June 6 from 8:00 a.m. to 4:00 p.m. For more information on Cann Memorial Gardens, call 580-767-0444 or visit http://www.poncacity.com/cann_garden.htm.

Plants featured at Cann Memorial Gardens:
Jatropha, *Jatropha integerrima*
Hardy Tapioca, *Manihot grahamii*
Persian shield, *Spilanthes dyerianus*
Duranta, *Duranta erecta ‘Gold Edge’*
Tassel flower, *Emilia javanica ‘Scarlet Magic’*
Water hyacinth, *Eichornia species*
Banana, *Musa ornata*
Profusion zinnia, *Zinnia angustifolia*
Purple fountain grass, *Pennisetum setaceum ‘Rubrum’*
Yellow bells, *Tacoma stans*

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, demonstrates how to prepare vegetables for canning.

**Vegetable Garden Chores** – This week in the vegetable garden we can continue to plant our sweet corn in the garden and start our squash seeds indoors. Our seedlings are starting to emerge, but the threat of frost has not yet passed. It is important to take steps to protect our seedlings from frost. One method of doing this is to cover plants with a floating row cover. Row covers are made from polyester and are very lightweight. They simply lay over the bed and allow light, water, and air to pass through. They are not air tight, but do offer some buffering against extreme temperatures. Covering seedlings and even larger plants helps to slow the formation of ice crystals in plant tissues. Row covers are also useful in protecting plants against insect pests.

Sincerely,
Kim Rebek
*Oklahoma Gardening Host*
Plant Highlight: Spring Blooming Trees and Shrubs – In this segment Kim shares a few eye-catching plants putting on spring floral displays. First we look at the fragrant Viburnum ‘Sarcoxie’. ‘Sarcoxie’ is a hybrid of *Viburnum carlesi* and *Viburnum burkwoodii*. It has semi-snowball type flowers that have a delightful fragrance. The flower buds are set at the end of every branch, making this shrub a prolific bloomer. The plant has semi-evergreen foliage that turns red-purple in fall. The short internode lengths result in dense foliage. The shrub fills out very nicely with little pruning.

Pearlbush (*Exochorda serratifolia*) is a low growing tree that can reach up to 20 feet, though in heavy clay soils 15 feet is probably a more reasonable expectation. It often grows with a multi-stemmed habit, though it can be trained as a single trunk. Due to its short mature height, it can safely be used around power lines. What caught my eye with pearlbush are the abundant, white flowers growing in dense clusters. It also produces interesting five-valved capsules in the fall. Pearlbush has relatively pest-free foliage and is a fabulous addition to the landscape.

One of our native fruit trees, the Pawpaw (*Asimina triloba*) is not commonly grown in the landscape, though is certainly an interesting fruit tree. The fruit has a flavor that is something of a cross between a banana and a mango, and is very high in protein. What I am interested in today are the unique flowers. The flower buds themselves are interesting, with this very dark, wooly covering. The flowers must be viewed from below. They are quite large and have such a rich, purple-red coloration. They do not smell particularly well, and are pollinated by flies. It is not the showiest tree in the landscape, but the flowers are certainly unique. Interestingly, the common pawpaw is the only larval host for the zebra swallowtail butterfly, which can be found in the eastern half of the state.

Oklahoma Botanical Garden and Arboretum Affiliate Garden Showcase: Northern Oklahoma College – In this segment we feature the gardens and grounds of Northern Oklahoma College in Tonkawa. Horticulturalist Kelley Conaghan is the dedicated and delightful grounds manager who shows us special plant collections around campus. A friend of the students, Kelley has worked to create cozy and secluded spaces for students and faculty to retreat and study. These patios include collections of tropical and other rare plants including: *Philodendron selloum*, *Plumeria*, *Pereskia* Cactus, Pencil Tree (*Euphorbia tirucalli*) and a magnificent Texas Ebony Bonsai (*Pithecellobium flexicaule*). Another special collection of roses honors veterans in a memorial garden. In cooperation with Extension Specialists at OSU, Kelley trials a number of unique shrubs on the grounds to test their suitability for Oklahoma climates.

Oklahoma Botanical Garden and Arboretum Affiliate Garden Showcase: Washington Irving Park and Arboretum – In this segment we visit Washington Irving Park and Arboretum in Bixby, Oklahoma. Named in honor of American writer, Washington Irving, who camped in the area in October 1832, the park includes 32.5 acres of public park and arboretum. The park contains a wooded walking trail, the Laci Dawn Griffin Hill butterfly garden, and memorials to the children of the Alfred P. Murrah Federal Building bombing and to the September 11, 2001 attacks. It also contains a statue of Irving seated on the porch of a replica of his home, Sunnyside at Tarrytown, New York. The arboretum contains an extensive collection of rare and unusual trees and shrubs. Walter Gund, President of the Friends of the Irving Foundation, shares with us a few of his favorite trees in the arboretum, including Quince Tree (*Chaenomeles*.
Simple Tools for Planting Vegetable Seeds – With the intensive bed system, placement of seeds and plants is very important in establishing proper plant spacing that will help to optimize production. And when we intend to plant in succession or use intercropping, it is important to have each plant in its assigned place. When we sow seeds individually, we want to place the seed exactly where we want the plant to grow. To help with the challenge of placing seeds individually, we have put together a few very simple tools.

For tight spacing of peas, leeks, beans and onions, we will use simple wooden frames built out of 2 by 1 boards with chicken wire stretched across. The frame should be as wide as the planting bed, and about 2 feet long. The regularly spaced openings in the chicken wire gives you perfect square spacing. Most chicken wire has 2-inch spacing between openings, and can be used to easily space plants at 4 inches. We simply stapled the wire onto the frame. To plant, we start at one end of the bed and lay out the frame. For 4-inch plant spacing, we put a seed in every other opening. When using a wire frame to plant, our plants will be set at 4-inch by 4-inch square spacing. You can also look for 3-inch wire for planting tighter spaced plants like peas or leeks.

If you cannot find the right sized wire for 3-inch spacing, or if you want to use 4-inch equidistant spacing instead of square spacing, you can make a simple planting board. This is simply a piece of plywood with holes drilled in where we want to drop seeds. Cut a board the width of your bed and 2 feet long. Then drill holes at the proper plant spacing. To obtain 3-inch equidistant spacing, we want to stagger our rows, with 2½ inches between rows. To plant we simply place the board over the soil and drop seeds through the openings. Remove the board and push the seeds into the soil to the proper depth.

Another method for obtaining proper plant spacing with larger plants is to use triangles cut to the proper dimensions. We made wooden triangles for 9-inch, 12-inch and 18-inch spacing. To plant, we simply place the triangle at one side of the bed with the corner at the location of the first seed. For the corn seeds I am planting, we use 18-inch spacing so the first plant will be set 9 inches in from the corner of the bed. I lay a flat edge of the triangle parallel to the edge of the bed, and place a seed at each corner. When planting smaller seeds that are difficult to handle, you may wish to use the triangle to simply mark where the seeds will go and then come back and plant after all the marks are set. After you set out the seeds or make your marks, flip the triangle across the bed, placing a seed at the unplanted corner. Continue down the row. To start the next row, simply flip the triangle down the length of the bed and continue as in the first row.

Make sure to always water your seeds in after planting. To avoid washing the soil away from the seed bed, use a watering can or very light stream of water until your seedlings emerge. It is also a good idea to mulch the bed, especially around transplants. Straw and seed-free hay are ideal vegetable garden mulches. The key is to make sure that the mulch is free of seeds, which will cause more problems in the garden than it is worth.

Vegetable Garden Chores – This week in our vegetable garden we can set out our last planting of radishes and we can continue to plant out sweet corn. The threat of frost has not yet passed, so we want to be sure to monitor the weather and protect plants as necessary. If you plan to start your melon seeds indoors, now is the time to start sowing. Warm weather is coming soon, and in a couple of weeks we will be able to start transplanting out tomatoes into the garden, so we need to start toughening them up for the outdoors by watering less frequently and holding back on the fertilizer.
Plant Highlight: Spring Bloomers in the Rock Garden – You can find something blooming in the rock garden all season long, and right now there are a few fabulous plants in bloom. The first is the Myrtle Spurge (Euphorbia myrsinites).

Myrtle Spurge is also called Donkeytail, and is an evergreen perennial. It has showy, blue-green foliage that looks great all year and has a magnificent architecture. And right now, the plants are flowering. Spurges have interesting flower heads, and this one is no exception. The flowers are inconspicuous, but are housed inside these showy bright yellow, almost chartreuse, bracts or modified leaves. Myrtle Spurge blooms March through April. The plants reach only about one foot high and about as wide, but can spread by seed. In fact, in some places it is considered invasive, so you want to keep a watch on the plants and pull up seedlings that try to escape the garden. Plant Myrtle Spurge in mass for best impact. You do want to be careful when handling this plant. Like most euphorbias, it exudes a milky sap that can irritate the skin. Myrtle Spurge is drought tolerant and tolerates poor soils making it an excellent plant for Oklahoma.

Creeping Phlox (Phlox subulata) also known as Moss Pink, is an herbaceous perennial that produces an abundance of small flowers in the spring. These plants look excellent planted in large masses, where they make a very powerful statement. Creeping Phlox grows to 6 inches high, with a spread about 2 feet. It makes an excellent ground cover, tolerates dry soils, such as those found in our rock garden, and they also look fabulous on a slope or spilling over a retaining wall. After the plants flower, pinch back the foliage to encourage denser growth. You can propagate Creeping Phlox by dividing plants in spring after the bloom.

Candytuft (Iberis sempervierensi) is another prolific bloomer and a classic rock garden plant. It is a broadleaf evergreen that becomes nearly completely covered in white blossoms in the spring. Candytuft is a wonderful groundcover, growing 12 inches high and spreading to three feet.

Bulbs are a wonderful addition to the rock garden as well. Look for dwarf cultivars and a variety of species that bloom at different times of the year. One bulb that stands out in our rock garden in spring is the daffodil cultivar 'Pheasant’s Eye'. It is also called the Poet’s Narcissus. It is one of the last daffodils to bloom in spring and has a remarkable coloration, pure white petals with a yellow cup and bright red fringed rim.

Oklahoma Botanical Garden and Arboretum Affiliate Garden Showcase: Woodward Park – In this segment Kim visits with Grounds Supervisor Jack Beighle about the park. Tulsa's most popular horticultural attraction is located at 21st Street and Peoria in the heart of historic Mapleridge. In 1909 the isolated tract of land, accessible only by wagon trails, was condemned by the city for a park site. At that time it was considered "too far out in the country" and early Tulsans considered the purchase price of $100 per acre a foolish move and doubted that the 45-acre site would ever be a valuable asset.

Known as the Perryman's Pasture, it had earlier been a portion of a 160-acre allotment given to Helen Woodward, a Creek Indian, by the Five Civilized Tribes Indian Commission. In 1909 the City of Tulsa acquired the property from Helen's father, Herbert E Woodward. Helen was a minor, age fourteen, when the land deal was made. Herbert had acted as her guardian and sold the property without her consent. In 1925 Helen Woodward Slemp (Mrs. S. H. Slemp) decided
to test the sale of her allotment. It became the subject of litigation in the Oklahoma Supreme Court. After four years of court battle, Mrs. Slemp lost her case to the City of Tulsa.

Today the 45-acre park boasts a wide variety of horticultural delights, including rock gardens, an English herb garden, a terraced Italian Renaissance rose garden, a Victorian conservatory (Lord and Burnham), a three-acre arboretum and an azalea garden with over 15,000 azaleas. The park provides a haven for citizens and visitors alike.


**Oklahoma Botanical Garden and Arboretum Affiliate Garden Showcase: Honor Heights Park** – In this segment we feature Honor Heights Park in Muskogee. Honor Heights Park (122 acres) is a botanical garden and arboretum located at North Honor Heights Drive in Muskogee, Oklahoma. It is a public park operated by the City of Muskogee. In 1909, the City of Muskogee purchased the original 40 acres of Honor Heights Park for $4,500. Agency Hill was officially named Honor Heights Park in 1919 in honor of the soldiers of World War I.

Honor Heights Park is known for its azaleas. It also includes the Conard Rose Garden, the C. Clay Harrell Arboretum, Art Johnson Memorial Dogwood Collection, Elbert L. Little, Jr. Native Tree Collection, floral gardens, white garden, and the Rainbow Division Memorial Amphitheater. It also features three trails: the Henry Bresser Nature Trail, the Audubon Trail, and the half-mile Stem Beach Trail, as well as picnic areas, a shelter, a pavilion, a gazebo, and public restrooms. The park is home to sports areas such as fishing lakes, a playground, open play areas, three tennis courts, and volleyball courts. In the winter, the park becomes the Garden of Lights when the azaleas, with trees and other shrubbery, are covered with over one million lights.

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, gives us information on canning jars and lids. For more information, please visit with following website - [http://www.fcs.okstate.edu/food/food](http://www.fcs.okstate.edu/food/food) (Scroll down to Lessons, Canning Jars and Lids).

**Starting Sweet Potato Slips** – Sweet potatoes aren’t started by seed like most other vegetables, they’re started from what we call slips. Slips are shoots grown from a mature sweet potato. Slips can be ordered from a catalog or you can start slips from a sweet potato bought at the store or left over from last year’s garden.

To start your slips, you need several healthy, clean sweet potatoes. Each sweet potato can produce up to 50 slips, but will likely produce far fewer under indoor conditions. Wash your potatoes and cut them in half. Place each section in a jar or glass of water with half of the potato below the water and half above. Use toothpicks to hold the potato in place. This is an excellent activity to do with your children or grandchildren, and hopefully a way to get them to try a new vegetable. Kids are always more willing to eat something they have grown themselves.

The slips will grow best if they are kept in a warm location, a window ledge or on top of a radiator is perfect. In a few weeks your potatoes will be covered with leafy sprouts on top and roots on the bottom. Make sure to change the water regularly to keep your slips healthy.

**Hardening Off Tomato Seedlings** – Next week we will begin to plant out the tomato and
pepper seedlings that we started in our greenhouse. Any time we move plants from an indoor location, whether a greenhouse or the windowsill, to an outdoor location, we need to take measures to avoid shocking the plants with the drastic change in climate. It is much windier, brighter, and the temperatures fluctuate more outside than indoors. So we need to toughen our plants up for the outdoor conditions. We do this through a process called hardening off. Start hardening plants off two weeks before transplanting out into the garden. We started this process last week. We stopped fertilizing plants and also started watering less frequently. This week, we need to start exposing the plants to outdoor conditions during the day by placing them in a protected location, out of direct sunlight and wind. We will leave them out for just an hour the first day, then 2 hours on the second day, and so on, until they are adjusted to being outdoors the full day. By the end of the week we can leave them out overnight. Be sure to keep watering the plants regularly. They will need more water outside as the wind and higher temperatures will cause the plants to use more water. We will demonstrate how to transplant tomatoes in a couple weeks.

**Vegetable Garden Chores** – Throughout much of the state we can finally start planting our warm-season vegetables later this week! Be sure the threat of frost has passed for your area before planting. If so, you can start to set out your cucumbers and summer squash, and plant those bean seeds. Also, if you plan to start your melon seeds indoors, now is the time to start sowing. And don’t forget to start those sweet potato slips.

**Announcements:**
The Everything Garden Festival of Northeast Oklahoma will be held Saturday, April 25 from 9 a.m. to 8 p.m., and Sunday, April 26 from 12 p.m. to 5 p.m. at the Claremore Expo Center. Hosted by Master Gardeners, this show has everything related to gardening including plant sales, outdoor kitchens, waterscapes, hypertufa leaf casings and educational presentations on a variety of topics. There will be a special Children's Backyard Area and Horticulturists and Master Gardeners will be on site to answer gardening questions. For more information, contact Denise Lamp, (918) 770-3229, dlamp@everythinggardenfestival.com. You can also visit the website: www.everythinggardenfestival.com.

Sincerely,
Kim Rebek
*Oklahoma Gardening Host*
Oklahoma Gardening Information Sheet (#3542)
OETA air date: April 18 and 19, 2009
OETA airtime: Saturday 11:00 a.m., Sunday 3:30 p.m.

Oklahoma Botanical Garden and Arboretum Affiliate Garden Showcase: Lendonwood

Gardens – Kim continues to highlight the OBGA Affiliate Gardens with a visit to Lendonwood Gardens in Grove, Oklahoma. Leonard Miller, founder of Lendonwood, tells us about the garden’s history. Lendonwood Gardens is a three-acre botanical garden near Grand Lake in northeastern Oklahoma. Grassy pathways meander through more than 1,400 different types of plants, including the largest collection of rhododendrons in the southwest, 500 varieties of daylilies and 25 varieties of dogwoods. The garden also houses large collections of Japanese maples, magnolias and tree peonies. For information on visiting Lendonwood, visit www.lendonwood.org/.

Plants featured at Lendonwood:
Deodar Cedar, Cedrus deodara ‘Silver Mist’
Japanese False Cypress, Chamaecyparis pisiferia filifera ‘Lemon Thread’
Maroon Japanese Maple, Acer palmatum ‘Bonfire’
Red Twinged Japanese Maple, Acer palmatum ‘Kiyohime’
Weeping Laceleaf Japanese Maple, Acer palmatum dissectum ‘Orangeola’
Red Flame Japanese Maple, Acer palmatum ‘Otome Zakura’
Tree peonies, Paeonia suffruticosa
Rhododendrons, Rhododendron yakusimanum and Rhododendron hyperythrum

Hilling Squash Seeds – In this segment Kim plants summer squash seeds in our small space garden. Squash and cucumber seeds are often sown into hills – small mounds of soil about 6 to 8 inches high. Hilling helps warm the soil in spring, which hastens germination and promotes faster growth. Hilling can also help improve soil drainage. When planting in hills, set 4 to 6 seeds in a circle at 5-inch intervals. Plant seeds one inch deep and lightly tamp soil over seeds. Squash should be planted after all danger of frost has passed and soils have warmed to 60 degrees Fahrenheit.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, shows how to freeze strawberries.

Vegetable Garden Chores – This week in our vegetable garden we can continue to plant our cucumbers, summer squash, and beans, and we can add tomatoes, peppers, eggplant, and tomatillos to the planting list throughout the warmer regions of the state. We also need to start our winter squash seeds indoors or in a cold frame if we plan to start our own transplants from seed.

Announcements:
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Kim Rebek, *Oklahoma Gardening* Host
**Oklahoma Gardening** Information Sheet (#3543)

**OETA air date:** April 25 and 26, 2009  
**OETA airtime:** Saturday 11:00 a.m., Sunday 3:30 p.m.

**Bustani Plant Farm** – In this segment we visit Steve Owen’s Bustani Plant Farm in Stillwater. Steve shares with us a variety of means by which he identifies and selects new plants to produce for the garden including foreign exploration, selecting unique traits among seedlings, and turning to old or heirloom varieties found in our own backyards. Together we explore a variety of plant groups that can be used in the garden, from native perennials to tropical annuals. Steve also shows off a few plants used for their magnificent foliage, including Golden Tansy (*Tanacetum vulgare* ‘Isla Gold’) and Bronze Sea Berry (*Haloragis erecta* ‘Bronze’). Finally, we finish with a sneak peak at a few plants that will not be released until next season. Following is a list of plants explored at Bustani Plant Farm. For more information on these and other specialty plants, visit [www.bustaniplantfarm.com](http://www.bustaniplantfarm.com).

**Plant List:**
- Black Foot Daisy, *Melampodium leucanthum*
- Rock Pink, *Talinum calcycinum*
- Roundheaded Dalea, *dalea multiflora*
- Pale Pink Poppy Mallow, *Callirhoe alcaeoides*
- Large Coneflower, *Rudbeckia grandiflora*
- Giant Coneflower, *Rudbeckia maxima*
- Yellow Cestrum, *Cestrum aurantiacum*
- Heirloom Dianthus, *Dianthus sp.*
- Green Ecbolium, *Ecbolium viride*
- Deep Blue False Vervain, *Stachytarpheta jamaicensis*
- Dwarf Red False Vervain, *Stachytarpheta* ‘Red Compacta’
- Lion’s Ears, *Leonotis leonurus*
- Coral Bean hybrid, *Erythrina x bidwillii*
- Bowtie Vine, *Dalechampia discoriefolia*
- Golden Tansy, *Tanacetum vulgare* ‘Isla Gold’
- Bronze Sea Berry, *Haloragis erecta* ‘Bronze’
- Orange Clerodendrum, *Clerodendrum speciosissium*
- Native Honeysuckle, *Lonicera flava*

**Transplanting Tomatoes** – In this segment Kim plants out the remainder of our tomato plants. We are growing several varieties in the studio garden; first we have an heirloom cherry tomato called ‘Riesentraube’. We are also growing the ‘Orange Flesht Purple Smudge’ tomato which has a very unique coloration, watch for the purple fruits later this season. We will also be adding ‘Yellow Pear Grape Tomatoes’ and a determinant type tomato called ‘Silvery Fir’. Two main types of tomatoes are available, determinant and indeterminate types. Determinate types set all their fruit at one time, while indeterminate types produce fruit over a longer time period. We typically grow indeterminate types in the home garden; however, determinate tomatoes are ideal for small spaces and containers or if you plan to can your tomatoes for later use. When selecting tomato cultivars for the vegetable garden one consideration is disease resistance. Consider selecting varieties resistant to Fusarium wilt and nematodes since these are problems in all areas of Oklahoma.

The ideal tomato transplant should be six to eight inches tall and dark green, with a stocky stem and well-developed root system. Normally, six to eight weeks are required to produce this type of plant from seed. When selecting plants at the garden center, don’t be fooled into buying the
biggest, tallest tomato plants, a short, stocky plant is a better choice. The number of plants needed will depend on your planned use. If your family is interested in having only fresh fruit, plant three to five plants per person. If you intend to can or freeze fruits, then five to ten plants per person should be grown.

Tomatoes should be set in the garden when the weather has warmed and the soil temperature is above 60°F. These conditions usually occur about April 5 in southern Oklahoma and about April 25 in northwestern Oklahoma. Temperatures below 50°F impair tomato growth.

Tomatoes will produce roots along portions of the buried stem. So to help increase the root system, I plant my tomatoes fairly deep. Pull off the lowest set of leaves or even two sets if the stems are very compact, and then set the plants to the depth of the lowest set of remaining leaves. This is much different than the way we plant most other plants, but is very beneficial for establishing a strong root system.

Sometimes the only tomato transplants we can find are long and leggy. To plant these, we will dig short trenches about four inches deep and lay the plants down in the trench. Set the plant in the trench and turn the top upward, leaving the top six inches of the plant exposed above the soil line as you fill the soil back in. This will allow roots to develop along the buried portion of the stem and you will end up with a much stronger plant than if you left the long leggy stem above ground.

Tomatoes are set two feet apart, and we will plant them in line to make it easier to stake the plants later. We are trying a stake and weave system which we will set up in a week or so. It is best to set out tomato plants in the evening or on a cloudy day to keep the plants from wilting and getting too dry. Mulching tomatoes is very important to provide even moisture and prevent fruit from cracking. Place a two to three inch layer of organic material such as compost, leaves or hay around the growing plants. We will start with compost, which is dark and will help keep the soil warm. Once the temperatures rise, we will cover the compost with straw, which has more of a cooling effect.

For more information on growing tomatoes refer to Extension Fact Sheet, HLA-6012 Growing Tomatoes in the Home Garden.

**Vegetable Garden Chores** – This week in the vegetable garden we can continue to plant our solanaceous plants: peppers, eggplants, tomatoes and tomatillos. We can also put our okra in the ground and continue planting summer squash, cucumbers and beans.

Sincerely,
Kim Rebek, Oklahoma Gardening Host
Integrated Pest Management with Tom Royer – In this segment, Entomology Professor and IPM Coordinator Tom Royer joins us to discuss Integrated Pest Management in the home landscape. Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices including cultural and physical techniques, biological control and chemical pesticides. IPM focuses on preventing pest problems before they occur. When pest problems do arise, management options focus on those with the least possible impact on the health of humans and the environment. IPM is an information intense approach that requires observation of plants and pests in the landscape. We will visit with Tom periodically throughout the season to learn about the numerous tools in the IPM toolbox. In this segment, we begin with biological control.

Biological control uses natural enemies of pests to suppress or prevent a pest outbreak. Like all animals, insects have predators that feed upon them, and diseases that make them ill or kill them. These are the natural enemies that we take advantage of with biological control. In a biological control program, our natural enemies include the three P’s: Predators, Parasitoids and Pathogens. Predators are familiar to most gardeners, but parasitoids are a bit lesser known. A parasitoid is an insect that attacks and kills a host by developing on or in the prey, consuming them slowly, rather than eating the prey all at once like a predator. Most parasitoids are very small, non-stinging wasps or flies. Their small size makes them nearly invisible in the garden. Finally, just like humans, insects and weeds can catch diseases and become sick or die. We can manipulate disease organisms and put them to work for us in managing pests in the landscape.

There are a number of ways to use biological control in the garden. We can purchase and release natural enemies as a way to prevent the buildup of pest populations. We can also manipulate the environment to attract natural enemies. Like all animals, natural enemies require food, water and shelter. In addition to feeding on prey, many predators and parasitoids feed on pollen. We can attract these natural enemies by providing appropriate nectar sources. Following is an extensive list of plants that can be used to attract natural enemies to the landscape as well other suggestions for encouraging natural enemies.

Good Plants for Attracting Natural Enemies to the Garden

- Aster Family (Compositae)
  - Blanket Flower – *Gaillardia* spp.
  - Coneflower – *Echinacea* spp.
  - Coreopsis – *Coreopsis* spp.
  - Shasta Daisy – *Chrysanthemum maximum*
  - Calendula – *Calendula* spp.
  - Asters – *Aster* spp.
  - Zinnia – *Zinnia* spp.
  - Dahlia – *Dahlia* spp.
  - Cosmos – *Cosmos* spp.
  - Sunflower – *Helianthus* spp.
  - Yarrow – *Achillea* spp.
  - Goldenrod – *Solidago* spp.
  - Tansy – *Tanacetum vulgare*

- Carrot Family (Umbelliferae)
  - Caraway – *Carum carvi*
**Pea Family (Leguminaceae)**
- Coriander – *Coriandrum sativum*
- Dill – *Anethum graveolens*
- Fennel – *Foeniculum vulgare*
- Queen Anne’s Lace (wild carrot) – *Daucus carota*
- Wild Parsnip – *Pastinaca sativa*
- Flowering Ammi/Bishop’s Flower – *ammi majus*
- Toothpick Ammi – *Ammi visnaga*

**Mustard Family (Brassicaceae)**
- Alfalfa – *Medicago sativa*
- Clover – *Melilotus spp.*
- Fava Bean – *Vicia fava*
- Basket-of-gold Alyssum – *Aurinium saxatilis*
- Sweet Alyssum – *Lobularia maritime*
- Hoary Alyssum – *Berteroa incana*
- Mustards – *Brassica spp.*
- Yellow Rocket – *Barbara vulgaris*

**Other Plant Families**
- Beebalm – *Monarda spp.*
- Speedwell – *Veronica spp.*
- Cinquefoil – *Potentilla spp.*
- Milkweed – *Asclepias spp.*
- Buckwheat – *Fagopyrum sagittatum*
- Phacelia – *Phacelia spp.*

**Ways to Attract and Protect Natural Enemies**

1. **Reduce Pesticide Use**
   - Reduce rate and/or frequency of applications
   - Use selective pesticides
   - Use microbial insecticides
   - Spot-treat or simply remove or prune out infested plants or stems
   - Stop treating minor pests

2. **Provide Food and Shelter**
   - Plant lots of flowering plants to attract natural enemies
   - Plan for a full season of blooms
   - Provide water in a shallow dish
   - Use cover crops
   - Grow some grass – home to many predaceous beetles
   - Practice strip cropping practices
   - Apply sugar water to attract natural enemies
   - Diversity, diversity, diversity!

3. **Protect natural enemy habitat**
   - Keep the dust down near trees and shrubs
   - Practice conservation tillage
   - Establish natural enemy refuge
   - Go wild – grow some native vegetation in an unkempt corner of the yard
   - Increase soil organic matter
   - Garden organically

4. **Experiment**
   - Experiment with biological control like you do with plant varieties
- Try biocontrol-friendly resistant plant varieties
- Collect pests to rear and redistribute natural enemies
- Make insect pathogen “tea”
- Utilize cultural controls like row covers

5. Improve Your Powers of Observation
- Learn to identify “key” and “minor” pests
- Learn to identify major groups of natural enemies
- Learn to identify signs and symptoms of diseased and parasitized insects
- Keep a garden diary or log to record what you do, what you see, and how well it worked.

Visit the following websites for more information on Integrated Pest Management (IPM):
http://www.ento.okstate.edu/ipm/
http://attra.ncat.org/

**Ornamental Grasses** – Grasses grace a landscape with movement and texture. And with the wide variety of forms and sizes available, there is a grass for all occasions. This year we planted an entire garden with grasses and grass-like plants which we call Blades and Plumes that brings a diversity of grasses and grass-like plants together in one striking display. We will highlight plants from this garden throughout the season.

**Mexican Feather Grass** (*Nassella tenuissima*) – This mounding perennial grass is compact and very wispy. It grows in a small mound 1 to 2 feet, and produces dense, thin blades that are constantly in motion with the slightest breeze. The graceful, arching blades can spread up to three feet in diameter. For such a delicate looking plant, Mexican Feather Grass is also quite tough – it is very drought tolerant and makes an excellent addition to a xeriscape garden. It is an Oklahoma Proven plant – native to prairies in Texas, New Mexico and Mexico. The grass is perennial and often reseeds in the garden. Unlike other perennial grasses, Mexican Feather Grass does not benefit from being cut back to the ground in the spring. In fact, the spring is when this plant really shines with its fine silvery plumes. Instead of cutting back the plants, we used a wide toothed comb to comb out any dead foliage and freshen the plants up a bit. You can also cut them back just 1/3 their length to rejuvenate. Mexican Feather Grass looks great when planted in mass.

The next plant we have in our grass garden is not actually a grass, but is often grouped with grasses in the garden center. This is a Corkscrew Rush (*Juncus effuses*) called ‘Wild Rumpus’. We also have a variegated cultivar growing in our patio called ‘Frenzy’. Rushes belong to the plant family Junaceae and are mostly herbaceous perennials, though some rushes are annuals. The leaves tend to be evergreen and erect, and those in the genus Juncus, like ‘Wild Rumpus’, are commonly rounded or cylindrical.

‘Wild Rumpus’ is such a delightful addition to the garden. Everyone who sees it stops to ask about the plant because it is so unusual with coiling leaves. Corkscrew Rush is very heat tolerant and does well in full sun, though it will also tolerate light shade. It does like to receive a fair amount of water, and can tolerate wet conditions. The plant reaches a height of 18 to 24 inches, and spreads about 18 inches. ‘Wild Rumpus’ is hardy to zone 7, so you can try to overwinter it in many parts of the state. You will want to cut back the dead foliage in early spring. Corkscrew Rush makes an excellent addition to container plantings, or give it a premier spot in the garden.

Another non-grass plant that we added to our Blades and Plumes Garden for its striking upright foliage is the Red Cordyline (*Cordyline australis*), a palm-like, sub-tropical or tender perennial
plant from New Zealand. The long, blade-like leaves add great color and texture to any garden. It can grow to tree size in warm climates, but does not tolerate cold winters. Generally, we need to bring the plant indoors in winter, where it makes a wonderful house plant. You could try to overwinter it in the southern parts of the state that fall within the hardness zone 8. In our climate, plants typically will reach about three feet in height. Cordyline tolerates sun or shade and also makes a wonderful container plant, allowing it to easily be moved indoors.

**Horticulture Tips for May** – David Hillock, Consumer Horticulturist, gives us tips for May.

**Trees and Shrubs**
- Prune and feed azaleas immediately after blooming.
- Insect Alert: ([EPP-7306](#))
  - Bagworms on juniper and arborvitae. (Late May)
  - Elm leaf beetles and larvae on elms. (Late May)
  - Lace bugs on sycamore, pyracantha and azalea.
- Soak new transplants unless rainfall is abundant.
- Pine needle disease treatments are needed in mid-May. ([EPP-7618](#))

**Turfgrass**
- Cool-season lawns can be fertilized again. If you did not fertilize cool-season grasses in March and April, do so now. This should be the last application until fall.
- Warm-season lawns may be fertilized again in May. ([HLA-6420](#))
- Seeding of warm-season grasses such as bermudagrass, buffalograss, zoysiagrass and centipedegrass is best performed in mid-May through the end of June. The soil temperatures are warm enough for germination and adequate growing season is present to promote winter hardiness.
- Vegetative establishment of warm-season grasses can continue. ([HLA-6419](#))
- Nutsedge plants become visible during this month. Post-emergent treatments are best applied for the first time this month ([HLA-6421](#)). Make certain warm-season grasses have completed green-up.
- The second application of pre-emergent annual grass herbicides can be applied in late-May or early June, depending upon timing of first application ([HLA-6421](#)). Check label for details.

**Flowers**
- Annual bedding plants can be set out for summer color.
- Plant summer bulbs such as cannas, dahlias, elephant ear, caladiums and gladiolus.
- Shake a leaf over white paper to look for spider mites. If the tiny specks begin to crawl, mites are present.

**Water Gardens**
- Clean out water garden and prepare for season. Divide and repot water garden plants.
- Begin feeding fish when water temperatures are over 50°F.

**Fruits and Vegetables**
- Plant watermelon, cantaloupe, cucumber, eggplant, okra, sweet potatoes, etc.
- Fruit spray programs should be faithfully continued during the next several weeks. ([EPP-7319](#)).
- Late May is the best time to control borers in the orchard. Check for label recommendations and controls.
**Cooking with Barbara Brown** – Barbara cooks wilted spinach with mushrooms and garlic.

**Wilted Spinach with Mushrooms and Garlic**

- 1 tablespoon extra virgin olive oil
- 2 cups sliced mushrooms
- 1 clove garlic, minced
- 1 pound fresh spinach, washed and stemmed
- 1/2 teaspoon freshly ground pepper

33. Heat large skillet over medium heat, add oil and heat until hot.
34. Add mushrooms to skillet, sauté while stirring until juices are released. Continue cooking and stirring until the liquid is gone. Add garlic and stir 30 seconds.
35. Add spinach in batches. Toss to coat with oil and to allow spinach to wilt, 2 to 4 minutes. Season with pepper, toss again.

Serves 4.

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Modified from original recipe EatingWell Wilted Spinach with Garlic at http://eatingwell.com/recipes
Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service 4/09

**Vegetable Garden Chores** – This week in the vegetable garden we can continue to plant our solanaceous plants: peppers, eggplants, tomatoes and tomatillos. We can also plant okra and continue seeding summer squash, cucumbers and beans. This week we can also start to set out our melon transplants.

If you planted blueberries this season or last year, you want to remove the flowers to prevent the plants from setting fruit. This will allow the plants to dedicate more energy to establishing a strong root system.

**Announcements**
Oklahoma State University Landscape IPM Conference scheduled for Thursday, May 21 from 8 a.m. to 4 p.m. at the OSU Botanical Garden in Stillwater. Lecture topics include biological control in lawn maintenance, landscape irrigation and field identification of landscape pests. Registration is $65 and includes lunch. For more information contact Stephanie Larimer at 405-744-5404.
The Symphony Show House continues to feature one of a kind interior and landscape design, this year in a historic Italian style villa. Proceeds from the showcase support music education in Oklahoma City. Information on tickets and special events can be found on-line at www.symphonyshowhouse.com or call 405-848-6787.

Sincerely,
Kim Rebek, Oklahoma Gardening Host
This week on *Oklahoma Gardening* we visit TLC Florist and Greenhouses in Oklahoma City to take a peek at new plants for the 2009 season.

**Annuals and Herbs** – April Enos joins us to present new annuals for the garden.

Sun Coleus, *Coleus* hybrids
- Lemon Twist
- Kingswood Carnival
- Black Knight
- Red Trailing
- Tapestry
- Diablo del Sol
- Splash

Blanket Flower, *Gaillardia aristata*, ‘Gallo Orange Tipped Yellow’

*Ageratum*, *Ageratum houstonianum* ‘Patina Delft’

*Lobelia*, *Lobelia erinus* ‘Techno Heat Dark Blue’

*Lobelia*, *Lobelia erinus* ‘Techno Heat Upright Dark Blue’

*Salvia*, *Salvia farinacea*, ‘Deep Blue’ and ‘White’

*Lantana*, *Lantana carolina*, ‘Candy Apple’

*Angelonia, Angelonia carita*, ‘Raspberry’

*Million Bells, Calibrachoa MiniFamous™* ‘Double Blue’

*Million Bells, Calibrachoa MiniFamous™* ‘Double Yellow’

*Tickseed, Coreopsis* hybrid ‘Limerock Passion’

*Tickseed, Coreopsis* hybrid ‘Limerock Dream’

*Variegated Potato Vine, Solanum jasminoides*

**Perennials** – Cindy Townsend brings us the best in new perennials for 2009.

*Hummingbird Mint, Agastache* hybrid ‘Raspberry Summer’

*Hummingbird Mint, Agastache* hybrid ‘Summer Sky’

*Hummingbird Mint, Agastache* hybrid ‘Summer Glow Yellow’

*Hyssop, Agastache* hybrid ‘Coronado Red’

*Black-eyed Susan, Rudbeckia fulgida* ‘Early Bird Gold’

*Meadow Sage, Salvia pratensis* ‘Eveline’

*Pincushion Flower, Scabiosa columbaria* ‘Butterfly Blue’

*Pincushion Flower, Scabiosa atropurpurea* ‘Beaujolais Bonnets’

*Tickseed, Coreopsis* hybrid ‘Red Shift’

*Tickseed, Coreopsis* hybrid ‘Sienna Sunset’

*Sea Holly, Eryngium planum* ‘Jade Frost’

*Stonecrop, Sedum spurium*, ‘Tricolor’

*Butterfly Bush, Buddleia davidii Lo & Behold™* 'Blue Chip'

*Blanket Flower, Gaillardia Commotion™* ‘Frenzy’

*Coneflower, Echinacea* hybrid ‘Tomato Soup’

*Coneflower, Echinacea* hybrid ‘Mac ‘n Cheese’

*Stonecrop, Sedum telephium ssp. ruprechtii* ‘Hab Gray’

*Stonecrop, Sedum telephium* ‘Sunset Cloud’

*Dianthus (Pinks), Dianthus* cultivars
  - ‘Fire Star’
  - ‘Starlette’
‘Pomegranate Kiss’  
‘Coconut Punch’  
Foamy Bells, X *Heucherella* ‘Sweet Tea’  
Foamflower, *Tiarella* hybrid ‘Mystic Mist’  
Coral Bells, *Heuchera* hybrid ‘Plum Royale’  
Violet, *Viola* hybrid ‘Columbine’  
Bugleweed, *Ajuga reptens* ‘Sparkler’  
False Red Yucca, *Beschorneria* hybrid ‘Ding Dong’

**Vegetable Garden Chores** – This week in the vegetable garden we can finish planting out our okra, summer squash and cucumbers. Make sure to loosely cover your squash plants with row covers to keep vine borers from laying eggs in the stems of the plants. The row covers will also protect the plants from squash bugs. If you started your own winter squash seedlings you will want to start hardening them off for transplanting into the garden next week.

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And don’t forget to stop by the Symphony Show House to see some fine landscaping and support a good cause as well. Information can be found on-line at [www.symphonyshowhouse.com](http://www.symphonyshowhouse.com) or call 405-848-6787.

Sincerely,  
Kim Rebek  
*Oklahoma Gardening* Host
An accent is the focal point or center of attention in a garden. It is not necessarily large or tall, but is of special interest throughout the seasons through form, color or texture. The Japanese Maple in this shady bed is a wonderful accent. It is interesting both for the fine texture of the leaves and also the red coloration of the foliage. When the leaves fall, the intricate branching pattern continues to provide interest in the winter months. And new foliage on Japanese Maples tend to be very colorful, making the trees stand out even among a batch of bulbs.

The accent is surrounded by supporting plants, mainly herbaceous perennials. Together, they tie our accent into its surroundings. One way to consider using support plants is to flank the accent by placing plants to the left and/or right of the accent. Supporting plants are typically created through mass planting. If we used just one of several species, the garden would become too complicated and confused. At different times of the year, one mass may be more prominent than another due to a brilliant floral display or unusual foliage color. But together, their role is secondary to the main accent.

It is not necessary to have only one accent in a garden, however, the number of accents should be proportional to the size of the garden. An accent must have sufficient space surrounding it to set it apart as an accent. When we have too many accents placed in close proximity, they loose their individual importance. Often, where two accents are used together, one is more dominant than the other. An example may be a medium-sized, rounded tree planted with a smaller, vase-shaped shrub.

Another role plants play in the landscape is that of a backdrop. The backdrop creates the stage on which our accents perform. A backdrop may also serve a dual purpose by acting as a screen. Often, the backdrop is a tall hedge, but may also be a structure such as a wall or trellis, or even a mass of flowers. Again, size is not the determining factor, but rather how the backdrop compliments the accent.

Some plants are used as a transition from one element to another. We use transitions to soften abrupt changes, such as the change in canopy from trees to groundcovers, or the change in scale from a tight, enclosed space to a wide open area. A transition can also be used on a smaller scale to move between sharply contrasting colors or textures. You might have an intermediate green between yellow and dark green foliaged plants.

Masses plantings can be used to create separation between two very distinct areas. Typically we think of low growing, spreading plants as groundcover, but small annuals and perennials, when planted in mass can have the same effect. Groundcovers can be very effective at highlighting or underlining an accent. They also help unite a garden and can reduce maintenance of weeds.

The various plant types work together to support the accent. This can be accomplished in
several ways, by creating a backdrop, flanking the accent or underlining it through use of a groundcover. Of course, many of these roles can also be filled by hardscape elements in addition to plants. For example, a fountain or sculpture makes a very strong focal point.

**Design Series: Designing a Planting Bed** – In this segment Kim demonstrates how to draw planting plans on paper. During the early stages of the design process, we are not interested in what specific plant materials will be utilized; rather, we are placing individual plants and groups of plants according to their function. Plant names will come later.

Start by drawing the outline of our garden. The shape of the bed will be determined by its surroundings, as well as the overall style of the landscape. Don’t forget to add any permanent fixtures or structures into the bed.

Once we have established the bed outline we begin by adding our accents. A large bed may have more than one focal point. Then, the accent needs a backdrop. The backdrop will vary depending on the type of planting bed you have. If there was a fence or a wall behind the planting, a row of three low- to medium-sized evergreen shrubs would make a good backdrop behind the accent. In an island bed the backdrop might cut through the center of the bed and act as a backdrop for two different accents viewed from different angles. When drawing your plans, you want to plan for the mature size of the planting.

Next, add the supporting material around our accents. Remember, support material works best in groups or masses, depending on the size of the bed; this may be a group of 5, 7, 9 or more plants. One way you can get a general idea of how large your masses need to be for a given area is to lay out empty plant containers, juice jugs or any material you have on hand to help visualize the role of the support material in our bed.

Now we add transitional material to tie the pieces of the garden together. This is an opportunity to add diversity in plant material. But we do not want to distract from our accent. We want to bridge gaps in height, mass or texture to help the eye move more smoothly across the garden. The transitional material should be proportionate to the space being filled.

Finally, we have areas where groundcovers, annuals or other low-growing plants can be used effectively to underline or highlight our accent. This material can be changed with the seasons. For example, you might plant a mass of daffodils for spring color, and over-plant these with pansies to give us a little color throughout the colder months. When the bulbs die out next season, you can come in with some fresh summer annuals.

Kim demonstrates how to create plan and elevation drawings of the planting bed. Plan drawings provide a birds-eye view of the garden. This type of drawing is useful for organizing the garden space. It provides us the relative sizes of plants and plant groupings in terms of how much ground space they occupy. It does not give any indication of plant height. For this, we need to create a separate drawing called an elevation drawing. An elevation view is oriented from the viewer’s perspective, looking at the garden as we more typically do, from the ground. This type of drawing allows us to see the relative heights of the various components of the garden.

As you work through this process remember, the basic structure or bones of the garden is created using plant form and function. Colors, textures and blossoms are secondary; they work to support or emphasize that structure. This is why, during the early stages of design, it is so important to think in terms of plant form, size and function, and leave plant names out until later.
Plants presented in the design bed:

*Pennisetum setaceum* 'Rubrum' – Purple Fountain Grass
*Nandina domestica* 'Fire Power' - Dwarf Nandina
*Prunus cerasifera* – ‘Krauter Vesuvius’ Cherry Plum
*Alternanthera dentata* - Purple Alternanthera
*Acer ginnala* – Amur Maple

**Design Series: Plant Selection** – The next step in creating our planting design is to add texture and color. We have already created a planting plan and established the structure of the garden, including the bed line, plant functional groups and general plant forms, now we can start to fill in the details by adding texture and color. A chart is a great way to keep all this information organized. Starting from the general and moving toward the specific, we can record the various traits desired for each of our different functional groups. Work from function to form then add texture and color. Remember that most flowering trees, shrubs, and perennials are only in bloom for a relatively short period of time each year. This is why it is more important to select plants based on form and texture, leaving color to the end as a supporting element.

With regards to flower color, you also want to consider bloom time – plan to have groups of plants blooming at different times throughout the season.

Once we have an idea of the texture, color and bloom period, we start to identify possible plants that can be used to fit the various roles. There are many great resources to aid you in your search for plants to meet your needs.

You can find a wide selecting of books on plant types and planting design at the library or bookstore. These are all organized in very different ways. This perennial book is organized by plant size and bloom period, making it easy to find a plant that fits your different needs. I like to look for books that have tables, because all the information is laid out very orderly and I can cross reference one plant to another. This is a good example, where the table shows foliage color for various trees during each season of the year. It even uses colors to help visualize the appearance over the year.

OSU Extension has a pair of fact sheets that can help you identify perennials and annuals well suited for a variety of uses. These include: [HLA-6410 Perennial Flowers for Specific Uses in Oklahoma](http://example.com) and [HLA-6425 Annual Flowers for Specific Uses in Oklahoma](http://example.com). There are also a variety of websites with searchable databases that allow you to search by color, bloom time, size and other characteristics.

**Fall Color**

Chinese Pistache (*Pistacia chinensis*) has brilliant orange, red or yellow leaves that grace the tree in autumn. The canopy has a beautiful rounded form, reaching a height of 30’ to 45’ with only a slightly smaller spread. The size makes it very useful as a street tree. The plant tolerates a wide range of conditions including dry and alkaline soils. Chinese Pistache is a tough tree tolerant of drought, heat and heavy soils. In addition to beautiful fall foliage, the fruits are also attractive – drupes produced in clusters, matures to a robin’s egg blue or red in the fall; blue drupes are fertile.

Firethorn (*Pyracantha coccinea*) is a large, upright, rounded shrub reaching a diameter of about 18 feet. The plant performs best in full sun and well drained soils, and is fairly drought tolerant. Firethorn is evergreen, but is most valued for its magnificent fall and winter fruit display. The
beautiful orange fruit hang on the shrub all winter long, depending on how hungry the birds get in the lean months. The berries are a favorite of cedar wax wings. Cut fruiting branches make a great addition to a cut arrangement, or can be used in holiday wreaths. The shrub itself is rather unruly, and requires either a lot of space or vigilant pruning. Space is the better option, because hidden among the foliage are numerous sharp thorns.

Flowering Dogwood (*Cornus florida*) is a small tree reaching a maximum height of about 30 feet. It is native to eastern United States where it grows as an understory tree. As such, flowering dogwood performs best in shaded conditions. In fact, it may commonly scorch if it receives too much sun. The fall foliage is a magnificent burgundy red, and also visible are bright shiny red fruits. In the spring, the tree produces a profusion of white blossoms.

**Vegetable Garden Chores** – This week we can start planting our winter squash as well as peanuts. And if you sprouted sweet potatoes they should be ready to separate into individual slips. To do this, you take each sprout and carefully twist it off of the sweet potato, lay it in a shallow bowl with the bottom half of the stem submerged in water and the leaves hanging out over the rim of the bowl. Within a few days roots will emerge from the bottom of each new plant. When the roots are about an inch long the new slips are ready to plant, starting about the first of June.

**Announcements**
The Oklahoma Native Plant Society will host its 32nd Annual Wildflower Workshop in Boise City on June 5 and 6. The workshop is themed “Dinosaurs to Dustbowl” and will feature presentations on native ferns and fruits from western Oklahoma and will include field trips to Autograph Rock, Black Mesa and other sites. For more information call 580-423-7237.

The Tulsa Audubon will be hosting its 16th Annual Wildlife Habitat Garden Tour and Plant Sale on May 30 from 9 a.m. to 5 p.m. and May 31 from noon until 5 p.m. You can begin the tour at any featured garden. Visit their website at www.tulsaudubon.org for tour information and a map of featured gardens or call 918-521-8894 for more information.

Summer Garden Fest is just a few weeks away, this year it will be Saturday, June 13, right here in the studio gardens. Be sure to watch for more information on the event in the coming weeks.

**Next Week on Oklahoma Gardening** – We have had a great deal of interest this season about canning fruits and vegetables from your home garden. Our very own food specialist Barbara Brown has shared several aspects of canning with us over the past few weeks. Next week, we will pull these all together for an in-depth lesson in canning. Be sure to tune in to *Oklahoma Gardening*.

Sincerely,
Kim Rebek, *Oklahoma Gardening* Host
Oklahoma’s Growing Wine Industry – In this segment Dr. Eric Stafne, Assistant Professor and Fruit Crop Extension Specialist, joins us to discuss the developing grape and wine industries in Oklahoma. Dr. Stafne shares with us a brief history of Oklahoma grape production and tips on getting started with grape production. His suggestion, educate yourself. Many opportunities are available to the interested student, including his annual Grape Production Course which familiarizes present and potential Oklahoma grape growers with grape management requirements throughout the growing season. More information on this and other educational opportunities is available on-line at http://www.grapes.okstate.edu/.

We also discuss grape production in the home garden. For wine production, as few as 5-10 vines can produce a suitable quantity of grapes to produce a 5 gallon carboy of wine. In general, hybrid grapes will be easier to manage in Oklahoma than the European (Vitus vinifera) varieties. Dr. Stafne also recommends table grapes for the home. These tend to have fewer disease problems and are easier to manage than most wine grapes. He suggests cultivars from the Arkansas breeding program, such as the cultivars Mars, Jupiter, and Neptune.

Oklahoma’s wineries also offer the opportunity for tourism. A map of vineyards in the state can be found at the Oklahoma Tourism website (http://agritourism.travelok.com/adventure.aspx?Level=AdventureType&ID=15) or you can find information on the Oklahoma Grape Growers’ and Wine Makers’ Association webpage (http://oklahomawines.org/OklahomaWines.htm).

To support the growing wine industry, a new educational opportunity will be offered April 3 and 4, 2009. The OSU School of Hotel and Restaurant Administration will present the first annual Oklahoma Wine Forum, with backing and support from OSU Alumni Carl and Marilynn Thoma, owners of Van Duzer Winery in Oregon. The forum will offer unique educational opportunities with an array of venues ranging from tasting panels with vintners, to an assortment of lectures by noted wine educators, vintners, scholars and scientists. The forum will have also showcase the benefits of sustainability in the context of grape production and wine making.

Echinacea Varieties with Plant Breeder Arie Blom – In this segment we interview plant breeder Arie Blom of AB-Cultivars. Mr. Blom started crossing various ornamental plants in his backyard in 2002. He has since released five Echinacea cultivars. Each new introduction represents years of breeding. Only plants that demonstrate a clear improvement to the existing trade assortment or unique character are placed into production. The following are Echinacea presented in this segment:

Echinacea purpurea ‘Pink Double Delight’ - This cultivar is very floriferous with pink, fully double pon-pon-like flowers. The cone of the flowers completely consists of ray flowers, which are however shorter than the lowest ray flowers, normally present with Echinacea purpurea. The plant develops many and very well branching flower stems, giving rise to a very floriferous plant habit. The stems are short, reaching a maximum height of about 26”. Flowering starts mid-June and continues until September.
Echinacea purpurea 'Coconut Lime' - This cultivar is very floriferous with pon-pon-like flowers. The color of the cone is pale lime, pairing nicely with the white basal ray flowers. The ray flowers of the cone are tubular in shape and shorter than the basal ray flowers. This plant stands out because of its high number of flowering stems. It reaches a height of approximately 30”. Flowering continues until September. Deadheading is recommended as it may extend the flowering period a little and provides a more tidy appearance.

Echinacea purpurea 'Meringue' - ‘Meringue’ is a sweet little Echinacea cultivar bearing beautiful white double flowers with a yellowish center. The disk flowers of this cultivar grow out into very long, tubular flowers, making a yellowish pompon, which is held up by a ring of pure white ray flowers. The short flower stems create a strong plant with an upright habit, and a maximum height of 18”. Flowering starts in July and continues until in September.

Echinacea hybrid 'Hot Papaya' - This exciting new introduction is the first Echinacea hybrid with orange, fully double flowers. An interspecific cross (a cross between two species) has produced this fantastic hybrid. The astonishing flowers have a deep orange color and do not fade as they age. The cone completely consists of petals, in the same color as the lower ray flowers. Flowering of 'Hot Papaya' starts early, beginning in June, and continues until August. The very strong stems will reach about 32" and branch very well.

International Rose Test Garden – Portland is known as the city of roses, and we simply could not leave the city without sharing the magnificent International Rose Test Gardens. Founded in 1917, Portland’s are the oldest official, continuously operated public rose test garden in the United States. The garden houses nearly 8,000 roses, representing well over 500 cultivars. The primary purpose of the garden is to serve as a testing ground for new rose varieties and to show the public what is commercially available. The garden is one of 24 official testing sites for the internationally respected All-American Rose Selection (AARS) and is one of six testing sites for the American Rose Society miniature rose test program.

In this segment, we present the 2009 AARS winning selections:

Pink Promise – This graceful hybrid tea rose has delicate pink blooms on long stems for cutting. Selected by the National Breast Cancer Foundation, Pink Promise represents a continual blooming promise of compassion and awareness. For every Pink Promise plant purchased, a percentage of the sales will be donated to the National Breast Cancer Foundation to help extend women's lives through education and early detection. In addition to large pink blooms, the plant supports dark green foliage. Pink Promise has good disease resistance, flourishing in many climates. The blooms are also highly fragrant, carrying a delightful, fruity aroma. Pink Promise was hybridized by Jim Coiner and introduced by Coiner Nursery of LaVerne, California.
Carefree Spirit™ - Today’s gardeners are looking for a rose that is easy to maintain. As a result, AARS stopped spraying fungicides on all shrub rose candidates in its 24 test gardens nationwide beginning in 2004. Carefree Spirit is the first and so far only landscape shrub to endure this real-world testing and be selected as a winner. This highly disease resistant selection has a compact, mounding habit and deep red blossoms speckled with white, turning to pink and white as they mature. Carefree Spirit was bred from parent rose, Carefree Delight™, which was an AARS Winner in 1996. However Carefree Spirit has even better disease resistance and blooming power than its parent rose, promising to perform well in any area of the country. Carefree Spirit was hybridized by Jacques Mouchotte, director of research at Meilland International and introduced by Conard-Pyle Co. of West Grove, Pennsylvania.

Cinco de Mayo™ - A charming rose, with an unusual bloom color, Cinco de Mayo is a seedling of the much loved Julia Child. This floribunda rose never stops blooming, with clusters of smoky, rusty red-orange blossoms. Its compact habit makes Cinco de Mayo ideal for use as a hedge or in a border. Cinco de Mayo has fantastic disease resistance and has performed exceptionally well across the country with little-to-no care. Cinco de Mayo was hybridized by Tom Carruth and is introduced by Weeks Roses of Wasco, California.

Flower Carpet® Roses from Monrovia Nursery – While visiting with Nicholas Staddon, Director of New Plant Introductions for Monrovia Nursery, Nicholas shares with several new Carpet Rose varieties that are hitting the market. Carpet Roses are ideal for their ease of care.

Flower Carpet® Pink Supreme Ground Cover Rose - Lovely pink blooms tinged with white are displayed over an extra long flowering period. No fancy pruning, these low-growing, densely branched shrubs are highly resistant to black spot and mildew and tolerant of high heat environments. Plant Culture: deciduous, full sun, moderate grower to 24 to 36 inches tall and 36 to 40 inches wide.

Flower Carpet® Scarlet Ground Cover Rose - Easy care ground cover shrub that produces masses of brilliant, scarlet-red flowers from spring through fall. Flowers up to 10 months in warmer climates. Glossy, dark green foliage is resistant to mildew and black spot. Ideal in borders, pots, and hanging baskets. Plant Culture: fast growing, spreading shrub 2 to 3 ft. tall, 3 ft. wide, full sun, deciduous.

Flower Carpet® Amber Ground Cover Rose - From soft red buds, an abundance of semi-double peachy-amber flowers, fading to seashell pink, envelope the plant and are fragrant - a first for the series. Features higher disease resistance than others in the series. Beautiful in containers or en masse. A vigorous but compact shrub 24 to 30 in. tall and wide. Full sun.

Bridge Garden – We have a dedicated group of volunteers, our Garden Ambassadors. This year we have two gardens that were designed in part by our volunteers. Earlier this season we looked at our Patriotic Garden, in this segment we visit the Bridge Garden. Garden Ambassador Billie Richardson was part of the team that helped design the bridge garden and she joins Kim to describe the process. The theme of the garden is “Morning, Noon, and Evening, Too”. The garden is designed to shine at all times of the day, with morning bloomers on the east end of the garden, and evening bloomers on the west. Many plant materials were chosen based on the time of day they bloom (e.g. morning glories and four o’clock’s). Other plants were included because the name contains a reference to the time of day, such as ‘Morning Light’ Miscanthus and ‘Sunrise’ Echinacea. On the west end, plants with silver foliage were also included, as these shine brightly in the moon light. Billie describes the many challenges in designing a garden on
paper, and shares with us some tips from her first experience with design.

Some of the plants included with this theme are:

- Morning Glory, *Ipomea purpurea* ‘Sunrise Blend’
- Chinese Silver Grass, *Miscanthus sinensis*, ‘Morning Light’
- Coneflower, *Echinacea* hybrid ‘Sunrise’
- Coleus, *Solenostemon* sp. ‘Alabama Sunset’
- Moonflower, *Ipomea x alba calonyction*
- Russian Sage, *Perovskia atriplicifolia*

**Vegetable Garden Chores** – This week in the vegetable garden we can start planting southern peas. We can also plant our sweet potato slips. Be careful not to add too much nitrogen-rich fertilizer to sweet potatoes in your garden. Soil high in nitrogen will make the potato bushes grow well above ground but few or no sweet potatoes will grow underground because the plant will put all of its energy into the leaves and stems.

**Announcements**
The Muskogee Garden Club will feature its Muskogee Garden Tour, Saturday, June 13, 2009 with gardens from the Country Club featured between 10 a.m. and 5 p.m. Tickets are $5. In addition, a non-profit vendor area and club plant sale will be held as a fundraiser. Contact oyana@att.net or 918-683-5380 for more information.

Also, the Tulsa Area Daylily Society will have an AHS Daylily Show and Sale Saturday, June 13 at the Tulsa Garden Center which you won’t want to miss.

**Next Week on Oklahoma Gardening** – Next week we will be visiting with Shawna Lee Coronado, our featured speaker for Summer Garden Fest, which is coming up on Saturday, June 13. Shawna is making a difference in her community by building a healthier lifestyle, greener environment, and stronger community through gardening. She is sure to inspire all of you with her energy and passion.

Sincerely,
Kim Rebek, *Oklahoma Gardening* Host
Integrated Pest Management with Dr. Tom Royer: Mechanical and Physical Control – In this segment we continue to explore aspects of Integrated Pest Management with Entomology Professor and IPM Coordinator Tom Royer. Integrated Pest Management or IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices including cultural and physical techniques, biological control and chemical pesticides. IPM focuses on preventing pest problems before they occur. When pest problems do arise, management options focus on those with the least possible impact on the health of humans and the environment. In this segment, we look at mechanical and physical forms of pest management.

Mechanical controls directly remove or kill pests, or physically keep insect pests from reaching their hosts by means a barrier (e.g., screens or row covers), trapping, weeding or removal of the pest by hand. Mechanical control methods can be rapid and effective, and are well suited for small acute pest problems in the home landscape. Mechanical controls have relatively little impact on natural enemies and other non-target organisms, and are compatible for use with biological controls.

Physical controls are methods that alter the physical environment in such a way as to make it unfavorable to the pest insect. An example of physical control that we have demonstrated previously on Oklahoma Gardening is solarization (see show notes for July 5 and 6, 2008 and September 13 and 14, 2008). Solarization is a simple non-chemical technique that captures radiant heat energy from the sun to kill seedlings and weed seeds, as well as some soil-borne disease organisms and nematodes. This is accomplished by spreading clear plastic over the soil.

Plastics can also be used for mulch. Certain insects respond to colored mulches, preventing them from landing on crop plants. Plastic mulch also provides a form of organic weed control.

Another simple mechanical management strategy is the use of row covers to prevent transmission of viral diseases to crops and to protect plants from insect damage. Row covers are lightweight, poly-spun fabrics that allow light, water and air to pass through. They are very effective in protecting plants from insect damage, such as that caused by flea beetles, squash vine borers or squash bugs. Another mechanical technique for managing squash bugs is to simply lay out pieces of wood in the garden. The bugs take shelter beneath the wood during the night and in the morning are easily collected for destruction.

Another form of mechanical control that we have demonstrated in the studio garden is the use of plant collars to protect crops from cutwork damage. Paper ‘collars’ placed around the base of the plant create a barrier between the worms and the plants. Materials that work well for collars include toilet paper or paper towel tubes, paper cups or strips of newspaper (see show notes for March 14 and 15, 2009).

Other types of mechanical control include cultivation or tillage to expose soil-dwelling insects to desiccation or predation; hand removal of insect eggs and large-bodied insects such as Colorado potato beetle and tomato hornworm; dislodging insect pests from plants by shaking plants or spraying plants with a strong spray of water.
**Integrated Pest Management with Dr. Tom Royer: Cultural Control** – In this segment Dr. Tom Royer discusses another aspect of Integrated Pest Management (IPM), cultural control. Cultural control basically addresses and affects the manner in which we cultivate our plants. Cultural control is generally simple, inexpensive and familiar to the homeowner, and is perhaps the most important aspect of home landscape pest control. Cultural control strategies include crop rotation, sanitation and other practices that reduce pest problems. It also includes practices such as the use of green manures or planting trap crops to manage nematodes, insects and disease organisms.

Where, when and how we plant can all affect the health of a plant. Selecting the right plants for the environment and placing them in an appropriate location are the first steps in culturally managing plant problems. Using resistant cultivars is another measure that can be taken to avoid pest problems. Many cultural control strategies are aimed at avoiding or preventing pest problems, rather than treating problems once they occur.

Practicing good sanitation by removing diseased tissue and picking up fallen or over ripened fruit is another way to reduce the incidence of pest problems. In the vegetable garden, using crop rotation and adjusting the planting dates are additional ways to avoid pest problems.

**Plant Highlight: Chinese Snowball Viburnum and Solomon’s Seal** – In this segment we take a look at two interesting plants in the landscape, Chinese Viburnum and Solomon’s Seal.

Chinese Snowball Viburnum (*Viburnum macrocephalum*) is a beautiful shrub that produces large white flower clusters in late spring. Hardy in zones 6-9, the deciduous shrub is an ideal addition to the Oklahoma landscape. It reaches a size of 12 to 15 feet and has a rounded to vase shaped habit. The plants do well in partially shaded locations. The foliage has a nice dark color, but the greatest feature of this plant is certainly the huge snowball flower clusters that can reach up to 8 inches. This shrub is heat tolerant and does not require much maintenance once established.

Solomon’s seal is a perennial plant belonging to the genus *polygonatum*. Variegated Solomon’s Seal (*Polygonatum odoratum 'Variegatum*) has a very strong white margin along the leaf edges. The plant has graceful, arching burgundy-colored stems that reach up to two feet. Plant Solomon’s Seal in heavy shade, it does not tolerate strong sun, and the white variegation certainly brightens up a shady corner of the garden. The plant has a rhizomatous root system and spreads much like iris to form a dense clump.

The flowers are rather unusual in that they dangle below the stems like tiny bells. Because they are produced on the underside of the stem, they are often overlooked. The flowers are delicate, white bells produced in pairs at the base of each leaf from April to May. They have a light, lily-like fragrance. The flowers are sometimes followed by blue-black berries, but often the berries do not form.

The name "Solomon’s Seal" is taken from the shape of the scar on the rhizome where the stem attaches. In some species this scar takes the shape of two overlapped triangles, which was the symbol King Solomon of Israel used to symbolize the union of body and soul. Solomon’s Seal is fairly easy to grow, but will certainly benefit from the addition of organic matter in the soil. It is a delightful, elegant addition to the shade garden.

**Summer GardenFest Preview** – This year’s Summer GardenFest is right around the corner. Next Saturday our studio will be transformed with a number of special guests providing hands-on demonstrations. Randy Stewart from Pond Pro Shops of Shawnee will teach visitors how to
install do-it-yourself water features, and our own Garden Ambassadors Jim and Barbara Kirby will show us how to construct concrete birdbaths. We will also be joined by OSU Horticulture Professor Dr. Lou Anella who will teach us how install drip irrigation systems. I will be in the vegetable garden giving visitors a first-hand look at our intensive bed garden system. We will also have a number of 4-H students on hand to present their very own Centennial Garden, which they have designed and installed as a group. And as always, we will have a variety of activities to keep the children busy.

This year, we welcome Shawna Lee Coronado as our keynote speaker. Shawna is an author, newspaper columnist and environmental and health correspondent from Warrenville, Illinois. Shawna is making a difference by building a healthier lifestyle, greener environment and stronger community through gardening.

Shawna believes nature equals nurture, and that by gardening and spending more time outdoors we can build a healthier lifestyle. She has spread the gardening bug throughout her community by creating a community garden that has helped bring her own community closer together. Shawna also encourages conservation in the home and garden by sharing tips on recycling materials in the garden, saving water and composting.

Shawna will speak on the topic of “Building Stronger Community Through Greening and Gardening” for Summer GardenFest 2009, beginning at 10 a.m. on Saturday, June 13. She is sure to inspire attendees with her energy and passion. You can read more about Shawna’s "Get Your Green On" Healthy Philosophy in her book “Gardening Nude” as well as in her newspaper column, The Casual Gardener and on her Blog at www.thecasualgardener.com.

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, makes a marinated onion salad.

**Marinated Onion Salad**

- 1-1/2 pounds large, sweet onions
- 2 tablespoons grated lime peel
- 3/4 cup fresh lime juice (8 to 9 fresh limes)
- 1 clove garlic, minced
- 1 tablespoon olive oil
- 1/4 teaspoon freshly ground black pepper
- 1/4 cup packed, chopped cilantro leaves
- 1/2 teaspoon salt, optional

36. Peel onions, cut in half and slice thin. Place in large non-metal bowl.
37. Grate peel from limes. Juice limes.
38. Mix peel, juice, garlic, oil and pepper and add to onion slices in bowl. Mix well, cover and refrigerate for a minimum of 30 minutes and up to 24 hours.
39. When ready to serve, toss again, adding chopped cilantro and salt, if desired. Serve chilled.

Serves 8.
Vegetable Garden Chores – Once we finish planting out our sweet potatoes and southern peas we can take a little break from planting in the vegetable garden. Of course, we will be busy bringing in the harvest and reaping some rewards from our hard work. It is a good idea to harvest regularly as to keep our plants in production and to prevent over-ripened or spoiled fruits from collecting in the garden. Spoiled fruits can attract insect pests and harbor disease agents that will spread through the garden. Following good sanitation practices by simply removing ripen fruits will go a long way toward managing pests. And don’t forget to donate your extra produce to those in need at your local food pantry or soup kitchen.

Announcements

The Muskogee Garden Club will feature its Muskogee Garden Tour, Saturday, June 13, 2009 with gardens from the Country Club featured between 10 a.m. and 5 p.m. Tickets are $5. In addition, a non-profit vendor area and club plant sale will be held as a fundraiser. Contact oyana@att.net or 918-683-5380 for more information.

The Tulsa Daylily Society presents the "Optical Extravaganza" (Daylily Show and Sale) at the Tulsa Garden Center Auditorium, 2435 S. Peoria on Saturday, June 13, 2009. It begins at 9 a.m. and ends at 4 p.m. A glorious display of flowering daylilies in colors of the rainbow, in all shapes, sizes and types. Everyone is invited to participate. Bring your entries at 9 a.m. and judging begins at 10 a.m. This educational event is free. For more information contact Randall Barron at 918-369-1581 or e-mail randallbarron@cox.net.

The 2009 OSU Lane Ag Center Annual Field Day will be held Saturday, June 13 from 9 a.m. to 3 p.m. The come and go event offers educational tours and displays of research and demonstration projects addressing vegetable production, herbs and alternative fuels crops. A featured aspect will be Certified Organic production and pest management practices. A meal featuring local cooking and ice cold watermelon will be provided. The event is open to the public and there is no fee to attend. The Lane Ag Center is located 10 miles east of Atoka on Highway 3. Additional information will be posted at www.lane-ag.org. For questions, call 580-889-7343 or email jim.shrefler@okstate.edu.
The Central Oklahoma Hemerocallis Society is having their annual Daylily Show, Saturday, June 20 at the Will Rogers Garden Exhibition Center, 3400 NW 36 Street, Oklahoma City. Doors open to the public from 1 p.m. to 4 p.m. For more information call 405-843-7130.

Sincerely,
Kim Rebek
Oklahoma Gardening Host
OSU Study Abroad Course in Landscape Design – This week we bring you footage from our visit to Japan. For the past 10 years, Professor Paul Hsu from the OSU Horticulture and Landscape Architecture Department has been bringing students to Japan for a study abroad course in Japanese Garden Design. The course introduces students to the rich culture and history of gardening and landscape design in this magnificent country. It also provided an enriching exchange between students and gardeners, citizens and educators in Japan. To celebrate the 10th Anniversary of this cultural exchange, we were invited along to document the trip and of course visit a number of extraordinary gardens. We are excited to share these gardens and some gardening techniques that we learned along the way with all of our viewers over the next few weeks.

The Ancient and Heian Periods – The best way to understand garden design in Japan is to look at its development over the course of history. So over the next four weeks we will look at changes in Japanese garden design through four major periods of Japanese history. Techniques for creating artistic landscapes were first introduced to Japan with the influx of Chinese culture during the Ancient Period between the 5th and 8th centuries. Toward the end of this period landscape design began to take on a uniquely Japanese character and the first pond and island style constructed landscape gardens appeared. These had their origins in the Japanese concept of Shima, the name used to describe the artistic part of early gardens, which traditionally represented an island or shima. Few of these original gardens remain, however the style flourished over the next four centuries during the Heian Period of Japanese History. During this period the basic style and theory of Japanese garden design was established. Gardens were designed to symbolize natural landscapes and included the sea and seashores, islands, hills or mountains, waterfalls, streams and rivers. During the Heian period, ponds, which symbolized the sea, had smooth, shingle edges made of pebbles from rivers. The best example of a Heian Period garden is at the Buddhist Temple Byodo-in located in Uji City. The Phoenix Hall, built in the year 1053, is surrounded by a constructed pond with a small island, called Kojima, and the very characteristic smooth shoreline or Suhama.

Kiyomizu-dera Temple – In this segment we visit the Zen Temple of Kiyomizu-dera located in Uji City, Kyoto Prefect. Kiyomizu-dera was built in the early Heian Period and dates back to the year 798. The temple takes its name from the waterfall which runs through the temple. The name Kiyomizu means “clear water” or “pure water”. The temple is located on a hillside and utilizes natural scenery rather than cultivated gardens. The temple has had a number of traditions over the years, some of which are still practiced. Beneath the main hall is a waterfall called Otowa, which is diverted into three channels. The water is said to hold therapeutic properties and drinking from the three channels confers wisdom, longevity and health. However, some Japanese people believe that one should drink from only two streams, as drinking from all three is greedy and can bring misfortune.

The temple includes a shrine to the god of love and good matches. Outside this shrine are two “love stones” set 18 meters apart. Visitors attempt to walk between the two stones with their eyes closed and if they succeed they are destined to find true love.

The most notorious tradition of Kiyomizu-dera centers on the veranda outside the main hall. The Japanese saying “to jump off the stage at Kiyomizu”, similar in meaning to the English phrase
“to take the plunge” refers to an Edo Period tradition where it was believed if one could survive the 13 meter jump from the stage, one’s wishes would be granted. Of 234 recorded jumps, 85% survived the plunge. Fortunately, the practice is no longer permitted.

**Vegetable Gardening with Sadaharu Murakami** – In this segment we visit the vegetable garden of Sadaharu Murakami of Kameoka. Mr. Sadahara has lived in his small village within Kameoka for 70 years and has grown vegetables for most of those years. He uses a raised bed style of gardening, which allows for a very unique method of irrigation. Growers in the area utilize water running in streams off the nearby mountain side to irrigate crops. The water is carried through narrow channels along the edge of the street and used to flood the low area between the mounded rows. Water seeps into the mounds and waters the vegetable plants from the bottom, keeping foliage dry, which in turn helps fight disease. Mr. Sadahara grows many familiar vegetables, tomatoes, eggplant, onion, peppers and reaps enormous harvests. He utilizes organic fertilizers including compost, fish meal and poultry litter. He also follows a number of practices handed down over generations, such as removing the flowers from his potatoes to encourage better tuber production. To protect his curcubits from cool spring night temperatures, Mr. Sadahara covers his plants with small plastic tents until the temperatures warm. He also rotates crops through the beds, allowing the soil to periodically “rest”.

**Japanese Vegetables in the Studio Garden** – In this segment we look at a variety of familiar and unfamiliar Japanese vegetables growing in the studio gardens. Beans play an essential role in cuisines all across Asia, from the adzuki bean common in Japanese soups, to mung beans which we most commonly see sprouted in our stir-fries or salads. We have planted soybean or edamame. While there are many uses for soybeans, we have selected a cultivar called ‘Beer Friend’ which is used for eating fresh. Each plant will produce many pods that each contains 3 to 4 seeds. We will boil the pods in salted water and enjoy the shelled beans as a healthy snack.

We take a look at a winter squash called Kabocha, it is also often called a Japanese pumpkin. The cultivar we planted is ‘Uchiki Kuri’. It is a Hubbard-type squash with orange-red rind, creamy yellow, thick flesh and a taste that is very sweet and nutty. Japanese pumpkins are commonly used in soups, stir-fries and pies. We also saw them grilled on the Japanese bar-b-que.

Onions are one of the oldest cultivated vegetables, so it is not surprising that they come in a wide variety of colors, shapes, sizes and flavors. We have selected a bunching onion called ‘Heshiko’. This is a perennial which can be harvested year-round. The slender stalks divide at the base to form a clump of foot-long shoots that are delicious in soups.

Asian eggplants are milder and have a more delicate taste than western eggplants. We selected the cultivar ‘Kyoto Eggs’ because it is very heat tolerant. While many Asian eggplants produce long slender fruits, this cultivar will produce rounded, three inch fruits with a deep purple color.

Peppers are another vegetable that come in a great variety of colors, sizes and flavors. We have selected a green variety called ‘Shishito’ that has a sweet-hot flavor perfect for stir-fries or tempura.

Perilla is a traditional Japanese herb used in flower arranging, as well as in cooking. The cultivar we planted is called ‘Aka Shisho’, and has deep red foliage which is also used to color preserved foods such as pickled ginger and salted plums. The aromatic leaves are reminiscent of anise, and used in salads or tempura, or to flavor seafood. The Vietnamese also use it to wrap around grilled meats.
In Oklahoma, the high summer temperatures typically prevent us from growing spinach much beyond spring or fall. But we are trying a pair of heat-tolerant spinach cultivars, the ‘Akarenso’ and ‘Okame’ hybrids. We will see how they take the Oklahoma heat!

**Pines and Pruning** – Pines are perhaps the plant that we most commonly associate with Japanese gardens and it is no wonder, as they certainly feature prominently. Pines symbolize longevity as well as permanence in contrast to the ever changing aspects of nature. The Japanese word for pine, Matsu, is also the pronunciation for the verb “to wait” and so pines also represent waiting or yearning for a lover or the resolution of an impossible situation.

The two most common pines in the Japanese garden are the Red Pine (*Pinus densiflora*) and the Black Pine (*Pinus thunbergii*) representative of the mountains and the sea shore. These pines are used in the garden to reflect their natural habitats and create the image of a seashore or mountain scene. All pines are pruned heavily to reveal their twisted, angular branching. In nature, strong winds create the characteristic crooked branching patterns, however, in protected gardens, these unusual shapes need to be re-created through pruning. This makes pines very labor-intensive to manage in the traditional Japanese style.

We were fortunate to have the opportunity to ask Professor Komai Kazuhiro from Kyoto University of Art and Design a few questions about pruning pine trees. Pruning is done when the new growth emerges. This new growth looks like tan candles on the ends of limbs and are commonly referred to as candles. We can shape and manage the growth of the tree by controlling how much of the candle remains. Typically, pruning needle-leaved evergreens is limited to while the candle is tan-colored and before the needles reach full length to avoid disfigurement. Usually in the spring, candles are tender enough to remove by pinching with your fingers.

It can be quite overwhelming to determine where we begin with such a project. Professor Komai described the process of pruning as looking for the character of the tree. Every person has their own unique character and the same is true of trees, but sometimes the character gets disturbed. When pruning, Professor Komai tries to find the character and make it more naturally visible by cleaning up all the unnecessary old needles. He is very careful in choosing the buds and angles of small branches, and each cut is considered individually. When Japanese pines are pruned following this method, the shapes that emerge are often very interesting. Sometimes branches stretch to great lengths, perhaps reaching out over water, and require bracing. The support structures used for such branches look a bit like crutches, with a small prop secured to the end of a wooden pole. These supports look very natural and disappear into the garden.

Pruning well maintained trees requires two basic steps; the first is pinching back candles. Professor Komai typically removes all but approximately 12 new needles from each candle. Once he has finished pinching the new growth, he goes back to remove the old needles. This allows more of the bark and intricate branch structure to be visible. One Japanese gardener described the number of needles on each branch tip as a family. When he prunes, he leaves a needle for each grandparent, one for each parent, and all the grandchildren of the family. Any extra needles are removed.

Sometimes we must remove branches to thin the canopy and reveal more of the trunk and structure of the pine. The first branches that can be removed are any that look broken or damaged. Then we remove branches that are growing in toward the interior of the tree rather than out and away from the tree. Whenever we prune a tree, we want to take extra precaution...
not to remove the top leader of the tree unless you want the plant to be shorter and denser. To give a more angular look, we will selectively leave branches at sharp angles. The best advice when pruning any plant is to take it slow. Step back from the plant frequently to look at its shape and try to find the character hidden within.

**Announcements:**
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The Stillwater Water Garden Tour will be held Saturday, June 27 from 9 a.m. to 5 p.m. and Sunday, June 28 from 1 to 5 p.m. The tour features a number of water gardens throughout Stillwater, including our own water garden here in the studio. Tour booklets are available at Stillwater National Bank and Oasis Garden Shop. For more information, call Danny Chance at 405-564-0834.

Sincerely,
Kim Rebek, *Oklahoma Gardening* Host
Monrovia Nursery, New Plant Introductions – In this segment we visit with Nicholas Staddon, Director of New Plant Introductions for Monrovia Nursery. Monrovia is among the premiere nurseries producing quality container-grown plants for garden centers around the world. Founded in 1926, today Monrovia grows over 2,200 varieties and 22 million plants annually. Each season they offer new, improved varieties and we take a look at some of these varieties that are well suited for Oklahoma’s climate.

Some of the features that Nicholas looks for in improved cultivars include year-round, or multi-seasonal interest, multi-use plants, dwarf cultivars, bold, new foliage colors, and wildlife interest. The following is a list of the plants presented in this segment:

River Birch, *Betula nigra*; improved cultivar ‘Summer Cascade’
Dianthus (Pinks), *Dianthus* ‘Wink’
Barberry, *Berberis thunbergii* cultivars: ‘Crimson Pygmy’ ‘Rose Glow’ and ‘Golden Ruby’
Itoh Peony, *Peonia* hybrid ‘Julia Rose’
Weigela, *Weigela florida* cultivars ‘Magical Fantasy’ (variegated) and ‘Pink Poppet’
Snowberry, *Symphoricarpos* ‘Scarlet Pearl’

Monrovia Nursery Tissue Culture Facility – In this segment we visit the tissue culture facility at Monrovia. Tissue culture is a plant propagation technique that allows for the mass production of plant material under sterile conditions. Some advantages of tissue culture include:

- Cloning to produce exact copies of plants with particularly good flowers, fruits or other desirable traits.
- Rapid production of large numbers of mature plants.
- Propagation of plants that otherwise are difficult to reproduce.
- Ability to clean a plant stock of unwanted disease agents.

Lisa Butera, Tissue Culture Research Coach, joins us to discuss the process of tissue culture from the laboratory to the greenhouse.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, makes cauliflower with almonds.

Cauliflower and Almonds
A main dish recipe
- 3 tablespoons slivered almonds
- 2-1/2 pounds cauliflower, cut in florets
- 1/2 cup crem fresh or crema Mexicana*
- 3 ounces Swiss cheese, grated
- 1/2 teaspoon coarse salt
- 1/2 teaspoon pepper
- 3 tablespoons dry bread crumbs
- 2 tablespoons chopped flat leaf parsley
40. Heat oven to 350°F. Spread nuts on a rimmed baking sheet and bake until browned and fragrant, about 6 to 8 minutes. Remove from oven.
41. Preheat oven to 375°F. Spray a 2-quart baking dish with nonstick cooking spray.
42. Bring a large pot of water to boiling. Add cauliflower and cook until just tender, about 5 minutes. Drain and spread on paper towels to dry.
43. Place cauliflower in baking dish and gently toss with crem fresh, half the cheese, salt and pepper. Sprinkle with remaining cheese. Cover with bread crumbs and toasted nuts.
44. Bake 20 to 25 minutes, until crumbs and nuts are golden. Garnish with parsley and serve.

Serves 6.

*To make your own crem fresh, warm 1/2 cup heavy cream to 100°F. Add 1 tablespoon sour cream, buttermilk or plain yogurt (whichever is chosen must contain active cultures). Let the mixture sit at room temperature for at least 9 hours then refrigerate until needed.

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Modified from original source: http://whatscookingamerica.net
Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service 9/08
Integrated Pest Management with Dr. Tom Royer: Corrective Measures – In this segment we continue to explore aspects of Integrated Pest Management (IPM) with Entomology Professor and IPM Coordinator Tom Royer. Integrated Pest Management or IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices including cultural and physical techniques, biological control and chemical pesticides. IPM focuses on preventing pest problems before they occur. When pest problems do arise, management options focus on those with the least possible impact on the health of humans and the environment. In this segment, we look at corrective measures that can be taken when pest problems arise.

Despite measures taken to prevent pest outbreaks, occasional problems still occur. One of the simplest ways we can manage pests once they are present is to physically remove them by hand. This is most commonly applied to weed pests, but we can also easily remove large insects such as tomato hornworms or Colorado beetles by hand. We can also squish the eggs of plant pests such as squash bugs and Colorado potato beetle. Pruning out diseased tissues from plants can help reduce the spread of disease agents in the garden.

Biological control agents, which we discussed in a previous IPM segment (see show notes for May 2 and 3, 2009), can also be released to manage a pest outbreak. This form of biological control is known as inundative control. With this approach the goal is to overwhelm the pest with a large number of natural enemies and provide a remedial, knockdown effect. This approach requires the purchase of natural enemies from a reputable supplier and their release into the landscape. There are many natural enemies available for purchase, but it is important to recognize that just because you can purchase it, does not mean it will work. The following tips will help you be successful in using inundative biological control measures:

- Know your pest.
- Know your natural enemies – some are very specific.
- Know your supplier and build a relationship with them.
- Know how to use the natural enemy – they are perishable!
- Have realistic expectations.

Another type of corrective measure that can be taken to manage pest outbreaks is chemical control. There are many different types of chemical controls, some of which are compatible with IPM. Many people think that chemicals do not have a place in IPM however, when used responsibly they can fit well into an IPM plan. Broad-spectrum chemicals kill beneficial insects as well as pests. When selecting chemicals look for products that are highly specific in action. Also consider microbial insecticides, such as Bt or Beauvaria, which have a narrow host range. Likewise, a number of biorational products, such as spinosad, are available. Many of these products are not only safer for non-target, beneficial insects, but also safer for the environment. It is best to rely on chemical pesticides as a last resort in IPM. Be sure to identify the pest and only treat primary pests. Spot treat only those plants that are affected by the pest.

Japanese Gardens in the Medieval Period – During the Medieval Period between the 12th and 15th Centuries, gardens became smaller in size, but more artistic. Many designs focused on
viewing from a single vantage point within an open sitting room. The Shoguns very much enjoyed viewing gardens and so they flourished during this period. During this time, Zen Buddhism spread across Japan and greatly influenced garden design. Landscape gardening was an instrumental component of the monk’s path to enlightenment and grew to a fine art during this period. Most notable of these is the dry landscape or karesansui garden.

**Karesansui Garden** – Often called Zen gardens due to their close association with Zen buddhism, a karesansui or dry landscape garden is unique in that it uses no water. Instead, gravel or sand, raked or unraked, is used to symbolize water and the movement or feeling of water. Karesansui gardens are extremely abstract and represent miniature landscapes or mindscapes. Every element in the garden is representative of a larger, landscape component. Large boulders are used to represent islands, mountains or boats and are often set upright or at odd angles. We commonly see rocks set in groups of odd numbers and in triangular shapes reminiscent of the mountains. Moss is used to represent land or forests, and gravel or sand is used to represent rivers, lakes and seas. These dry water masses have as much impact in the garden as true ponds, and allow for a variety of expression through raking. Pruned trees and shaped shrubs can be used interchangeably with rocks to represent land forms. Like the larger viewing gardens of the time, Karesansui gardens are often meant to be viewed from a single vantage point.

The gravel features so prominently in the karesansui garden. We’ve used 3/8 inch limestone chips to represent the water in our garden. This is probably the largest size gravel I’d use, any larger and it would not rake nicely. The smaller the gravel, the more intricate your designs can be when raking. I purchased some pea gravel, which has much smaller particles than the gravel in our bed, and you can clearly see the difference in the raking between the two materials. When selecting gravel for a karesansui garden, you want small and uniform particles without fines (sometimes referred to as clean gravel).

The act of raking the gravel is both functional and meditative. The gravel is raked to create patterns recalling waves or ripples in water. This clearly adds to the overall aesthetical appearance of the dry garden. But for Zen monks, the practice of raking also helped them to focus their concentration, and so was a form of meditation. Achieving perfect lines is not easy, and so it requires mental focus and discipline. We are using a rake that the gardeners of Kameoka Exchange Center presented to the gardens years passed. Different rakes are used to achieve different forms and patterns. You can also use a garden rake to create similar lines in the gravel. The lines need not be static, but can change with your mood. Creating variations in pattern can be a creative challenge.

Our Karesansui garden is in full sun, but this style of garden is very adaptable to shady locations as well. A karesansui garden could be the perfect solution to those difficult to plant, heavily shaded areas of the landscape. In fact, many of the plants we commonly see in Japanese dry gardens, such as azaleas, mondo, and ferns require shade in Oklahoma. Many karesansui gardens outside of Japan utilize plants that are representative of the forms found in a traditional Japanese dry garden, but are better adapted to the local climate. A good example of plant replacement in our garden is the replacement of moss, the most typical ground cover, with something a little more tolerant of Oklahoma’s heat. We have used Blue Star Creeper (*Laurentia fluviatilis*) quite successfully. It does well so long as you keep it watered.

Karesansui gardens were largely inspired by Japanese landscape painting and the two arts are closely linked. One magnificent example of karesansui is the garden at Ryoan-ji Zen Temple in Kyoto. This rectangular Zen garden is strikingly different from the pond and island gardens
constructed in the medieval period. It consists of only 15 boulders, white gravel and moss. It is up to the viewer to determine for his or herself what this garden signifies. The simplicity of the design and the contemplation it provokes are essential components of Zen philosophy. Laid out at the end of the 15th Century, the gardens at Ryoan-ji are considered one of the masterpieces of karesansui. The boulders are placed such that, when looking at the garden from any angle, only 14 of the boulders are visible at any one time. It is traditionally said that only when one reaches enlightenment is one able to view all 15 boulders.

Another interesting karesansui garden is at Ginkaku-ji Temple or the Temple of the Silver Pavillion in Kyoto. This dry garden, called Ginsyadan, consists only of white quartz, raked to symbolize waves and designed to be viewed by moonlight.

The poet Muso Soseki wrote a poem about karesansui in the late 1300s which nicely describes the symbolism evident in these Zen gardens.

Without a speck of dust being raised,
   the mountains tower up,
   without a single drop falling,
   the streams plunge into the valley.

Ikebana – The Japanese Art of Flower Arranging – In this segment Kim shares a lesson in Ikebana. Ikebana is the Traditional Japanese Art of Flower Arranging. Like gardening and calligraphy, flower arranging is considered an art form and is traditionally passed from sensei to student. Kim’s sensei was Mrs. Fujiwara, who studied Ikebana in the Ohara Ryu School, which follows the original style of Ikebana, and is one of 20 styles practiced today.

The Ohara Ryu style uses a very natural arrangement of flowers to highlight the natural beauty of plant forms. The tools we need to get started are a shallow container, a heavy holder, called a kenzan or frog, and of course plant material. Different schools of Ikebana use different types of kenzan. They are very heavy, and must be in order to support the plant material upright. Kenzan can be purchased at some florist shops or ordered on-line, just search Ikebana tools and you will find a number of suppliers.

Ikebana often emphasizes stems and leaves, rather than blossoms. The arrangements draw attention to shape, line and form rather than color. One aspect of Ikebana is the employment of minimalism. Arrangements consist of a minimal number of elements, but their organization is important and the essence of Ikebana. The structure is based on a triangle with the three points often considered to symbolize heaven, earth and man or the sun, the moon and the earth. The three points of the triangle are created by the tips of the branches, flowers or foliage used in the arrangement. The first point of the triangle is upright and will be the tallest element of the arrangement. The second point is lower and set at an angle to the first, approximately 45 degrees off center. The third point in the triangle is lowest of the three and set at a very wide angle, almost horizontal. That establishes the basic structure with three points.

A second triangle may be set within the first. Typically, if two triangles are used together, the first, larger triangle is created using woody material, and the second may incorporate flowers. It is important to remember the idea of minimalism with the addition of flowers – only a few elements are used. The flowers (or foliage) are arranged along the three points of the triangle, again with decreasing height, and are set forward of the first, larger triangle. Flowers can be used singly or in small groups.
You can also apply the concepts of Ikebana to arrangements in a flower vase; however, it is difficult to obtain the wide angle commonly used for the lowest point of the triangle. Selecting weeping or drooping plant material for the third point might help in obtaining the effect.

Ikebana originated as a Zen practice, first used in arranging flowers on the altars of Zen temples. Ikebana was later incorporated into the tea ceremony in a flower arranging ceremony called Sa Ho. As a Zen practice, Ikebana expresses beauty through simple forms and using few elements. The practice of Ikebana is meant to be a time of contemplation; a time to reflect on and appreciate nature. It provides relaxation for the mind, body and soul.

**Sprouting Bean Sprouts** – In this segment Kim demonstrates how to sprout bean sprouts for fresh consumption. Bean sprouts are the easiest and fastest crop to grow. They can be grown right in your kitchen with very little space – just enough room for a jar. Mung beans are the most popular variety of bean used for sprouting, but you can sprout any kind of bean or even lentils, and each will have a distinctive flavor. To get started all you need is a handful of beans, a jar, cheesecloth, a rubber band and a dish towel.

Start by washing the bean seeds thoroughly in water. Pick them over to remove any small stones or debris. Use about one-half cup for a large mason jar. The beans will expand three to five times their original volume, so be sure to adjust the amount of beans according to the container being used. Overcrowding can lead to poor sprouting and prevents proper washing which can encourage rotting.

Soak beans overnight in warm water at room temperature. In the morning, drain the beans and rinse thoroughly two to three times. Put the beans in the jar and cover with three to four layers of cheesecloth. Lay the jar on its side and shake gently to spread the beans out evenly. The beans will sprout in three to six days depending on the variety and the temperature of the room. During sprouting, it is important to rinse the beans regularly: two to three times in cool weather and three to four times in hot, humid weather. Rinsing is important to keep the beans evenly moist for sprouting. Rinsing also keeps the seeds fresh and clean. Some food-borne illnesses have been found associated with sprouts of all types. Rinsing does not guarantee protection against pathogens. Until effective measures to prevent sprout-associated illness are identified, persons who wish to reduce their risk for food-borne illness from raw sprouts are advised not to eat them; in particular, persons at high risk for severe complications of infections with *Salmonella or E. coli* O157:H7, such as the elderly, children, and those with compromised immune systems, should not eat raw sprouts. (Visit [http://www.cdc.gov/ncidod/eid/vol5no5/taormina.htm](http://www.cdc.gov/ncidod/eid/vol5no5/taormina.htm) for more information).

It is also important to keep sprouts out of the light. Light causes sprouts to turn green. White sprouts have a more delicate, sweet flavor. You can place the jar of sprouts in a cabinet or closet to keep them out of the light, but you do not want to forget about rinsing them. It may be best to keep the jar on the counter where you will see it regularly. Cover the jar with one or two dish towels to protect them from the light.

Once the sprouts have reached the desired size, rinse them in a bowl of cold water and run your fingers through them gently to separate the sprouts. Remove any hulls that float to the surface. Drain the sprouts well and store them in a plastic bag in the refrigerator.

**This Week in the Vegetable Garden** – We want to focus on keeping our plants clean and healthy. A few simple steps can be followed to help avoid foliar disease in our tomatoes. First, make sure to water plants in the morning, rather than late in the day. This allows time for the
sun to dry foliage. When foliage remains wet overnight it provides an ideal environment for many bacterial and fungal diseases to develop. Using drip irrigation is a good way to avoid this problem. Also, it is a good idea to prune back any foliage that comes in contact with the ground. This will help reduce the spread of soil-borne pathogens to the leaves.

**Announcement** – The Water Garden Society of Oklahoma will be opening their yards for public viewing during their 23rd Annual Water Garden Tour on Saturday, July 11 and Sunday, July 12 from 9 a.m. to 6 p.m. All gardens are located in the Oklahoma City Metropolitan area. Tour maps will be available at area garden centers, as well as fish, plant and pond supply outlets. You can also visit their website for more information at www.WGSO.org.

**Next Week on Oklahoma Gardening** – We will continue looking at the gardens of Japan, focusing on gardens of the Edo Period and those created by designer Kobori Enshu. We will also feature highlights from this year’s Summer Gardenfest, construct a bamboo fence and visit a bamboo grower right here in Oklahoma.

Sincerely,
Kim Rebek, *Oklahoma Gardening* Host
Edo Period Gardens: Tea Gardens – As we look at the development of gardens through Japanese history, the next major time period was the Edo period, from the 15th to late 19th century. During this period of history the tea ceremony was perfected and with it tea rooms and tea gardens. These spaces tended to be small and designers avoided including too much ornamentation in the tea gardens. The tea room and tea garden are intimately connected, so that as you sit in the tea room, you feel connected to the natural world surrounding you.

Fushimi Inari Temple in Kyoto houses an excellent example of the traditional tea garden. While not all tea gardens house a tea room, in those that did, the garden and house were designed as one, with the gardens being a natural extension of the house. Both were designed based upon the simple concepts of the tea ceremony or sa-do. The Japanese word for the tea garden is roji, which literally means dewy ground. The tea garden functioned as a space of transition from the outside world to the world of the tea ceremony. It was a place for one to compose their mind as they awaited their host and prepared to enter the tea room. The world inside the tea garden is carefully arranged, and each tea garden offers a unique experience. Tea gardens traditionally include a stepping stone path leading to the tea house, stone lanterns, called toro, to light the way at night, and a stone basin, called a tsukubai, where guests purify themselves before the ceremony.

Strolling Gardens and the Designs of Kobori Enshu – Large strolling gardens also took shape during the Edo period. These Strolling gardens are arranged for viewing a sequence of effects from a path that carries you through the garden. These large gardens were closely associated with tea gardens of the era, as they contained a series of small spaces for several different tea ceremonies to take place at the same time. The larger strolling garden unifies the various small species into a picturesque whole.

A famous landscape designer of the time, Kobori Enshu, created a number of notable gardens during the early 1600s. Many of his gardens endure today and are celebrated among Japan’s great works. As a master of the tea ceremony, Enshu designed a number of famous tea houses, but he also incorporated earlier styles in his work, including karesansui and pond and island gardens. We visited a few of Enshu’s gardens, including those at Nijo-jo Castle and Kodai-ji Temple, which remain intact from the original design. We also visited a garden that was re-created from drawings of his original work. Let’s take a look at the creations of Kobori Enshu.

Nijo Castle – In this segment we visit Nijo Castle in Kyoto. The castle was built as the Kyoto residence of the Tokugawa Shoguns and was completed in 1625. The Nijō Castle has two concentric rings of fortifications, each consisting of a wall and a wide moat. Between the two main rings of fortifications lies Ninomaru garden, designed by the famous landscape architect and tea master, Kobori Enshu. The garden is designed as a large-scale viewing garden with a reflecting pond. The pond contains three islands and features numerous carefully placed stones and topiary pine trees. The arrangement of the buildings in a diagonal line affords a variety of viewing points and vision lines into the garden. Each view was carefully designed.

At the time the pond was constructed, landscape artists were changing the way shorelines were created. During the Heian Period, shorelines were relatively simple and smooth. During the 16th and 17th centuries, shorelines became more intricate with stones skillfully placed to create more variable and complex views in to the garden. These views change with the vantage point. The
use of rocks also shifted, with older gardens giving reference to natural unshaped stones, and newer gardens incorporating cut stone into the landscape.

The way rocks are grouped in the landscape is also very important and the expression of rock groupings changed over time. In older gardens, rock groups had a very strong presence, inheriting an almost mystical aspect. In some gardens, the rock groupings tell stories, such as at Kinkaku-ji, The Temple of the Golden Pavilion, where the rock groupings and islands tell the Zen creation story.

**Kodai-ji** – In this segment we visit another creation of Kobori Enshu, the gardens at Kodai-ji Zen Temple in Kyoto. The temple was established in 1606 and houses many properties considered to be of significant cultural importance in Japan. Among these is the Moon Viewing Pavilion, a small, four-pilared structure designed to allow viewing of the moon’s reflection of the surface of the pond. It features a Chinese-style cypress bark roof with three gables. The Garyoro or Reclining Dragon Corridor is a magnificent covered hallway leading from the founder’s hall to the sanctuary that resembles the back of a dragon. The property also houses a number of famous tea houses.

The property includes two important gardens. The first is the Temple Garden which was redesigned by Kobori Enshu from an older garden located on the property. The Temple Garden is a tsukiyama or “constructed landscape” garden famous for its excellent stone layout. This pond and island style garden contains two sections. The north section of the pond contains an island shaped like a tortoise and the southern section contains a group of stones representing a crane. The turtle and crane are symbols of long life and happiness. The garden has been designated by the Japanese Government as a Place of Historical Importance and Outstanding Scenery.

Kodaiji’s south garden is a karesansui or dry landscape garden that is a more recent creation. This garden features a large area of raked gravel punctuated by conical gravel formations. The gravel bed is surrounded by an undulating border of moss and stone reminiscent of a shoreline. The raked gravel of the garden evokes the ripple patterns found on the surface of a pond. Like many traditional karesansui gardens, it is intended to be viewed from a single vantage point.

**Imperial Garden East** – In this segment we visit a garden at the Imperial Palace. Tokyo Imperial Palace is the main residence of the Emperor of Japan. It is a large park-like area located in Tokyo and contains numerous administrative buildings and the private residences of the imperial family. The East Garden is where most of the administrative buildings for the palace are located. The Ninomaru area of the gardens was created as part of a renovation project in the 1960s from a 18th century garden map that depicted the layout of the grounds as designed in the 1600s by Kobori Enshu. The grounds include a large pond and island style garden which houses a section dedicated to irises. Eighty four species of iris are represented in the iris garden. Another feature is the Ninomaru Grove, which includes tree species from each of Japan’s 47 prefectures. The trees have been donated from each prefecture, with a total 260 trees and 30 varieties.

**Uses of Bamboo in Japanese Gardens and in the Oklahoma Landscape** – To the Japanese the segments of bamboo evoke the image of generations, and the supple nature of the plant calls to mind an image of resilience. With their hollow stems, bamboo is often used to metaphorically depict the Zen principle of an empty heart. Bamboo is used extensively in Japanese gardens and plays many different rolls. It is an incredibly versatile plant, but is most often used in the cut and
dried form rather than the living form.

Bamboo is used to construct a variety of structures in the Japanese garden. The bamboo fence is a very important component of the garden. It helps create a sense of enclosure and separation from the outside world. Bamboo fences are built in a great diversity of styles and sizes, from low edging to full fences.

Bamboo is also used to build a number of structures used in the landscape. We see many fountains constructed out of bamboo. The timbers are used both to construct the spout of the fountain, and also to build covers or lids for water basins. The ladles used to cleanse one’s self at the tsukubai are also often built of bamboo. Bamboo is also used for a wide variety of indoor tools and decorations such as baskets.

Living bamboo is also used in the garden. Timber bamboos are typically too large to use in traditional gardens, though in larger strolling gardens and at many temples, timber bamboo may be used along the edges of the property to enclose the garden from its surroundings. In a sense they are used to create living walls. Smaller bamboo varieties fit much better into the garden and are often used as ground covers. This is a great use for bamboo both in Japan and here in Oklahoma, however, when looking for a bamboo to use as a ground cover, be sure to look at the expected mature size. Many bamboos that are labeled as dwarf can reach a height of four to six feet.

Bamboos thrive in Oklahoma, and can become somewhat invasive. Be sure you are dedicated to managing the plant before you add it to your landscape. One way to help keep bamboo under control is to plant in containers. But these voracious plants can escape containers, so you will still need to keep an eye on it. Bamboo is a remarkable versatile group of plants and there is a bamboo for just about every situation in the landscape.

**Bamboo Satori Visit to Guthrie** – In this segment we visit the Bamboo Satori in Guthrie. Owner Linda Finley grows a wide range of bamboo species adapted to Oklahoma’s climate. She shows us a number of interesting species and cultivars, ranging from the giant timber bamboo to low-growing ground covers. She also provides tips on growing bamboo and ways to help manage this sometimes aggressive plant. Following is a list of bamboos highlighted during the visit.

Timber bamboos, *Phyllostachys vivax* and *P. nigra* ‘Henon’
Sweet shoot bamboo, *Phyllostachys dulcis*
Low-growing bamboo, *Shibataea kumasaca*
Ground-cover bamboo, *Sasa masamuneana* ‘Albostriata’
Bamboo for screen, *Phyllostachys* species ‘Bissetti’
Gray-stemmed bamboo, *Phyllostachys nigra* ‘Boryana’
Black bamboo, *Phyllostachys nigra*
Yellow bamboos with green stripe: *Phyllostachys bambusoides* ‘Castilonis’ and *P. aureosulcata* ‘Spectabilis’
Green bamboo with yellow stripe, *Phyllostachys aureosulcata* ‘Yellow Groove’
Linda’s favorite bamboo, *Phyllostachys viridis* ‘Robert Young’
Temple bamboo, *Semiarundinaria fastuosa*

If you are interested in visiting the Bamboo Satori, you can contact Linda at (405) 590-0179 or e-mail at [Lindafinley01@sbcglobal.net](mailto:Lindafinley01@sbcglobal.net).
**This Week in the Vegetable Garden** – Squirrels are destroying our corn! What can we do about this rascally critters? We are going to try using a Scarecrow, but not the traditional scarecrow stuffed with straw and bearing button eyes. Instead, we will install a motion activated sprinkler called the Scarecrow®. This system uses an infrared sensor to detect motion, then releases a short blast of water, frightening unwanted wildlife away. It is effective not only against squirrels, but also deer, raccoons and other wildlife. You can find more information about the Scarecrow® online at [www.contech-inc.com](http://www.contech-inc.com).

**Announcements**
The Water Garden Society of Oklahoma will be opening their yards for public viewing during their 23rd Annual Water Garden Tour on Saturday, July 11 and Sunday, July 12 from 9 a.m. to 6 p.m. All gardens are located in the Oklahoma City Metropolitan area. Tour maps will be available at area garden centers, as well as fish, plant and pond supply outlets. You can also visit their website for more information at [www.WGSO.org](http://www.WGSO.org).

The Tulsa Herb Society is hosting an evening with Jim Long at the Tulsa Garden Center on Monday, July 13 from 7:00 to 8:30 p.m. Admission is free. For more information contact the Tulsa Garden center at 918-746-5125 or visit the website [www.tulsaherb.com](http://www.tulsaherb.com).

Sincerely,
Kim Rebek
*Oklahoma Gardening Host*
Meiji or Modern Period Gardens – In this segment we explore gardens of the next historical period in Japan. The Meiji or modern period of Japanese history extends from the late 19th century to the present time. This period saw a great deal of westernization in Japan. At this time, many traditional Japanese garden designs came to incorporate ideas from western gardens, often resulting in an eclectic mixture of what seems to be two very opposite design styles. Components new to Japanese gardens included the use of lawns and flower beds. Innovative karesansui landscape designer Mirei Shigemori is one of the famous gardeners of this period. We visited one of the gardens he designed, as well as two other modern gardens. Each is a unique mixture of tradition and modernism.

Tofuku-ji – In this segment we visit Tofuku-ji Temple in Kyoto. The temple was built in 1236, though the original buildings burned down and were rebuilt in the 15th century. The Hojo, or abbots’ quarters, were rebuilt in 1890, and the gardens arranged at the Hojo’s four quarters were laid out in 1939 by landscape sculptor Mirei Shigemori. The gardens are a magnificent example of modern Zen gardens, a blend of tradition and abstraction. Shigemori wished to express in the gardens the simplicity of Zen using the abstract construction of the modern arts. The gardens surround all four sides of the quarters, with each section uniquely different. Together, the four gardens represent the eight aspects of the Buddha’s life. The southern garden is composed of a cluster of four giant rocks symbolizing the Elysian Islands: Horai, Hojo, Eiju and Koryo. The islands lay on a bed of swirling raked gravel that symbolizes the eight rough seas. At the western end of the garden, five moss-covered mounds symbolize Gozan, the five sacred mountains.

The western garden is composed of azalea shrubs trimmed to a square shape, set against square fields of white gravel, the two series of blocks laid out in a checkerboard pattern to reflect the garden’s name, Seiden’ichimatsu, which is an ancient Chinese pattern of land division. The northern garden uses foundation rocks from the front gate, cut into squares, and laid out in an irregular checkerboard pattern with moss planted between the square stones. The garden embodies the Tsutsen Bridge and gorge with its magnificent autumn foliage as a scenic backdrop. The eastern garden contains seven cylindrical stones cut from the temples foundation pillars set in a bed of raked gravel and laid out to represent the main stars in the Great Bear Constellation.

Murinan – In this segment we visit another modern garden in Kyoto called Murinan. Murinan was established in 1896 at the former home of the Meiji Statesman Yamagata Aritomo. The garden has many western influences, most notably in the use of a turfgrass lawn in place of stone or moss. The topography is also relatively flat as compared to more traditional landscape gardens, and the waters flow in a stream, rather than setting gently in a pond. The water used in the garden comes from a canal that brought water to the city from the surrounding mountains as a large public works project.

Murinan is a good example of a Tsukityama garden design, or a landscape garden that uses “borrowed scenery” from the surrounding land. In this case, you can see the Higashiyama Hills in the background. The use of borrowed scenery creates the illusion of more space in a relatively confined garden. It also allows designers to highlight nearby vistas. Ponds, streams, hills, stones, trees, flowers, bridges and paths are often highlighted in this style.
Ume Kouji Park – In this segment we visit the Suzaku or Sparrow gardens located in Ume Kouji Park in Kyoto. The gardens were built in 1994 to commemorate Kyoto’s 1,200th anniversary. These gardens utilize all of the gardening techniques handed down through the ages. In Japan, gardening is a high art and a practice that is traditionally passed from sensei to apprentice. The gardens at Ume Kouji Park encompass many traditional design concepts applied to a modern landscape. It includes three elements that are central to Japanese garden design, these are water, whether real or symbolic, stone, and plantings. Japanese garden design reflects the strong connection the people of Japan have with nature. This relationship guides the use of the three elements in designs. For example, water appears as a natural part of garden’s surroundings. This is why we see streams, ponds or waterfalls, but not fountains. The sensory qualities that water provides in the landscape are integral to the Japanese garden, the sound, the motion, the flickering of light of its surface. But also important is the visual space provided by a sheet of water, or in a dry landscape, the raked expanse of gravel.

Stones are used functionally to create paths, walls or bridges, and are also used symbolically to represent land or mountains. To create the imagery of mountains, large boulders are often set at sharp angles so that they seem to erupt from the earth. Smaller stones are commonly placed in odd numbers and in groupings that reflect a triangular shape, again representative of mountains. Rocks may also be used as religious imagery in the landscape. Certain rocks are believed to contain a spirit or supernatural power, other act as a conduit of ki – the life energy. Rocks are also used simply for their sculptural beauty.

Plant material is used carefully, with Japanese designs giving preference to subtle green tones and much less emphasis is placed on flowers. We do find seasonal bursts of color, such as the cherry blossoms and fruits, or when the azaleas and irises are in bloom. The variety of plants used in older Japanese landscapes was fairly narrow, as influenced by Zen principles of simplicity. Today, we see a broader plant palette emerging.

The gardens at Ume Kouji Park bring the three design elements together in beautiful harmony and are representative of a wide range of traditional styles. The landscape gardens depict a rolling hillside and copy views from the Japanese countryside including mountains, streams and rice paddies. The strolling gardens carry you through a thicket of Japanese red pines to several smaller, intimate spaces which include bridges, a stream and a waterfall. There is also a magnificent viewing garden that puts a modern twist on the traditional pond and island garden.

Introduction to KEC/Sister Cities – One of the cities we visited in Japan was Kameoka, which is Stillwater’s Sister City. The Oklahoma Gardening team has forged a relationship with the gardeners of Kameoka over the years through the Stillwater Sister Cities Council. Our studio gardens house a traditional Japanese Tea Ceremony Garden designed and installed by visiting members of the Youth Gardeners Association of Kameoka. We have also hosted members of their gardening team over the years. These gardeners helped renovate our karesansui garden and gave demonstrations during our Summer GardenFest. The students participating in the study abroad program have likewise benefited from this cultural exchange. Each year, students participating in the course have had an opportunity to work alongside the gardeners of Kameoka. Together, they have been slowly constructing a Japanese garden outside the Exchange Center. This year, they added to the garden by installing a section of bamboo fence and a stone path. While in Japan, we spoke with Professor Paul Hsu, who has led the Japanese Study Abroad program for ten years. He shares with us information about the program and the many benefits it provides to participating students.
**Japanese Landscape Design Study Abroad Course** – In this segment Professor Paul Hsu of the Department of Horticulture and Landscape Architecture at OSU joins us in Kameoka outside the Kameoka Exchange Center. He provides a brief history of the program, tells us what is involved in the study abroad program and what the students gain from this unique experience.

**Installing a Stepping Stone Path** – In this segment the students participating in the study abroad program are installing a stepping stone path at the Kameoka Exchange Center in Kameoka, Japan. Kim walks us through the process. First, the stones are laid out in the desired pattern. It is a good idea to keep the spacing between stones consistent, and make sure they are laid in a comfortable walking pattern. Use a pick ax to outline the shape of the stones so that you know where to dig holes. Move the stone out of the way and start digging. Only move the stone you are working on, that way, the remaining stones in the path will be in place to help you stay oriented. Choose large stones for pathways, as they do not move easily. Once the hole is dug, set the stone in place so that only a couple inches extend above ground. Backfill soil around the stone, tamping the soil firmly as you go. Use a level to make sure the stones are set properly. The stones will settle a little over time. You can plant steppable plants around the stones to reduce the need for mowing.

**Bamboo Fence Construction** – In this segment we install a section of bamboo fence at the studio garden. The fence style is called the four window style fence, the same style the students learned while working in Kameoka. In Japanese this style is called Yotsume Gaki. The first step is to set cedar posts at 5 foot intervals, we have already done this. Our posts are not set in cement; however you could use cement if you want to install the posts permanently. Cedar is a good choice of wood to work with as it is not favored by termites. In Japan, the gardeners burned the posts using a hand torch for preservation before setting them in the ground.

Once the posts are in place, we attach bamboo cross beams. We need to cut the bamboo to the proper length using a hand saw. The best place to cut bamboo is just outside of the nodes or joints. Bamboo is hollow, but at the joints tissues are fused across the interior. Cutting outside this area provides a cap to help keep water out of the bamboo tube and slow deterioration. Secure the cross beams to the posts using screws. It is a good idea to reverse the orientation for every other pole so the thicker ends are not all on one side. This will improve the appearance of the fence.

Once the cross beams are in place, we are ready to set the vertical poles. It can be difficult to create an even line across the top, so to help us we are stretching a string across the tops of the posts. As we set the vertical poles we will hammer them down until they are in line with the string. Hammer the poles gently with a rubber mallet. We want to cut the poles long enough so they will extend into the ground about four inches to help keep them in place. We will not screw the vertical poles in place as we did the cross beams, instead, they are tied onto the cross beams with sections of rope. In Japan we used a rope made from the fibrous bark of the hemp palm, *Trachycarpus fortunei*. The rope is died black with charcoal. You can use a rope made of natural or synthetic fibers. The more important consideration will be the thickness and strength of the rope; we want it to last a while in the elements.

The knot we are using is called Otoko Musubi or the Men’s Tie. For lashing, use your right hand to manipulate the rope, and your left to pinch and hold. To start, the leading end of the rope will be in your right hand. Wrap the rope across the front of the joint, bringing the leading end over and around the upper right corner of the joint, then down behind the joint and back out under the lower left corner. Pull the rope tightly across the top of the trailing end, pinching it with your left hand, thumb on top, level with the cross beam. Now bring the same, leading end
of the rope under the lower right hand corner of the joint, behind and over the upper left side of
the joint. Pinch the rope tightly with your left thumb and forefinger. The leading end of the rope
will still be oriented to the right hand side. Take the trailing end of the rope (left hand side) and
make a loop, coming over and behind the leading end, again pinching in left hand. Now take the
leading end, bring it under the knot and pinch it between your thumb and forefinger along with
the loop. Bring the leading end through the backside of the loop, pulling the slack through the
loop and again pinching it tightly. Use your right hand to position the loop so that it is oriented
upward, pinch it with the left thumb and forefinger, then pull the left string to tighten the knot.

Tying the Men’s Tie tightly will take some practice. Once all of the vertical poles are tied in
place, our bamboo fence is complete. It is relatively easy to install, once you get the hang of
those knots.

**Study Abroad Information** – If you are a student at OSU or know a student who is interested in
learning more about the Japanese Study Abroad program, please visit the Department of
Horticulture and Landscape Architecture’s student web page at
[www.hortla.okstate.edu/hortla/student.htm](http://www.hortla.okstate.edu/hortla/student.htm). The Division of Agricultural Sciences and Natural
Resources (DASNR) is a leader in connecting students with enriching study abroad
opportunities. The Division offers a number of opportunities to study abroad, both long term and
in the short course format. For more information on DASNR Study Abroad programs visit
[http://internationalagprograms.okstate.edu](http://internationalagprograms.okstate.edu).

**This Week in the Vegetable Garden** – This week in the vegetable garden we can start sowing
seeds for our cold crop transplants. Broccoli, cabbage, cauliflower, bok choi and Brussels
sprouts are excellent fall crops. In fact, many of these perform much better in the fall than in the
spring. You can start seeds indoors, or find a shady, protected location in the landscape. A cold
frame with the lid removed, or with a screen in place to provide shade makes an ideal location
for starting seeds. If you plan to replant any tomatoes, peppers, tomatillos or eggplants, now is
also the time to start those seeds.

**Announcements**
The Tulsa Herb Society will host an evening with Jim Long at the Tulsa Garden Center on
Monday, July 13 from 7:00 to 8:30 p.m. The event is free and open to the public. For more
information contact the Tulsa Garden Center at 918-746-5125.

The Kerr Center for Sustainable Agriculture is offering workshops in Integrated Pest
Management and Sustainable Pest Control in Tulsa on July 20, and Oklahoma City on July 27.
Instructors from OSU Extension and the Kerr Center will demonstrate to small scale growers
how they can reduce pesticide use and still produce an abundant crop. For more information,
visit the Kerr Center Website at [www.kerrcenter.com](http://www.kerrcenter.com) or call 918-647-9123.

Sincerely,

Kim Rebek
*Oklahoma Gardening Host*
Meiji Shrine – In this segment we visit Meiji Shrine in Tokyo. Many of the gardens we have presented during our Japan series were housed within Shinto Shrines. Shinto is the name of the former State Religion of Japan. Shinto is not Buddhism, though the two faiths have had a strong influence on each other throughout Japanese history. In Shinto, the afterlife is not a primary concern; much more emphasis is placed on fitting into this world, instead of preparing for the next. Shinto involves the worship of kami, or the spirits that dwell within objects. In Shinto, everything has a spirit, every rock, every tree, every cloud. The Shinto faith garners a great love and respect for nature and underlies many traditional Japanese arts including flower arranging, architecture and garden design.

A Shinto shrine is a structure that houses a kami. There are over 100,000 Shinto Shrines in Japan, with most villages housing at least one. The major feature of a Shinto Shrine is the Honden or sanctuary where the kami is enshrined. Shrines also include torii or sacred gates that delimit the sacred grounds of the shrine. Torii have become a symbol of Japan. Shrines also include lanterns or toro and washing fountains called temizuya. It is customary for visitors to stop at the temizuya upon entering the shrine to cleanse their hands and mouth. Another famous structure of the shrines are the romon or two-storied gates.

Fushimi Inari Temple – In this segment we pay a visit to Fushimi Inari Shrine in Kyoto. The shrine is dedicated to Inari, the Shinto god of rice and commerce. The Shrine lies at the base of mountain and includes trails up the mountainside lined with over 5,000 torii or gates. Each gate is donated by a Japanese business as a way of asking Inari for prosperity. Inari has become famous for its thousands of gates, each painted red, the first color, the color of strength and energy.

The Shrine houses a magnificent tea garden and also a pond garden shaped in the form of the kanji, or Japanese written character, for the word heart. In Japanese design, kanji are often used symbolically, much the same way we may use a pictorial image or shape. The heart-shaped kanji also has a connection to the color red, so prominent in the shrine, as red is the color of blood, the first color, the color of beginning.

Common Ground: Plants used in Japanese and Oklahoma Landscapes – In this segment we look at some of the plant material commonly used in both Japanese and Oklahoma landscapes. The similarities in plant material are due to similar climatic conditions between the two countries. The main difference in climate between the two areas is that Oklahoma tends to have greater weather extremes, while the oceans surrounding Japan tend to moderate the climate there. As a result, while we use many of the same plants, we often tend to use them in a slightly different manner. For example, in Japan, Japanese Maples (Acer palmatum) grow in full sun, which would quickly scorch the trees in Oklahoma.

Another difference in plant growth is many plants grow much larger in Japan, including the Japanese Maples, but also trees like the Deodar Cedar (Cedrus deodara) and even the Nandina (Nandina domestica) and Rhododendrons (Rhododendron species) reached great heights. One reason for this is likely water limitations here in Oklahoma. We also have considerably different soil types.

Horticulture is certainly an international industry, and people have been moving plants from one
country to another for centuries. This movement of plants has brought crops from one corner of the world to the other, and also carried ornamental plants across seas. Sometimes, this movement of plants has had devastating results where an aggressive plant escapes cultivation and becomes invasive in the environment. For this reason, the movement of plants across borders is highly regulated by the U.S. Department of Agriculture, and similar entities abroad. And it is important that you never move plant material from one country to another.

Most often, this exchange of plant material is harmless and has resulted in the great diversity of ornamental plants available in today’s garden centers. Many of the plants that we enjoyed in Japan have been brought to the United States. These of course include favorite trees like the Japanese Maple (Acer palmatum) and the Japanese Black Pine (Pinus thunbergii) as well as a variety of shrubs such as Nandina (Nandina domestica) and the Japanese Camellia (Camellia japonica). We also grow a number of herbaceous plants originating in Japan, including Miscanthus grasses (Miscanthus sinensis) which are native to Japan, China and Korea. Often, the scientific name of the plant gives its origin away, as the species names of Japanese plants are often japonica or japonicum or nipponicum, which contains the root Nippon, the Japanese way of saying Japan.

The Japanese also grow a number of plants native to the United States. One plant that we were surprised to find flowering in a Japanese garden was the Oak Leaf Hydrangea (Hydrangea quercifolia) one of our Oklahoma Proven plants. Interestingly, there are even a couple Oklahoma Proven plants that have their origins in Japan, including the Japanese Painted Fern (Athyrium nipponicum) and Japanese Kerria (Kerria japonica).

Of course, there are many plants commonly grown in both Japan and Oklahoma, which have their origins in other areas. One example is this tree, Ginkgo biloba, planted along the streets of Japan. Ginkgos are an ancient species of tree originating from China. We also found plenty of hollyhocks, oxeye daisies, and other flowering plants from around the world.

All of these plants are excellent choices for planting in a Japanese style garden. Remember to consider sun exposure when planting the more traditional Japanese species, as most will require much more shade in Oklahoma.

**GardenFest Highlights** – In this segment we bring you highlights from our 2009 Summer GardenFest. We appreciate all the help we received from our wonderful volunteers and staff to make this day special.

**Water-wise Containers with Shawna Coronado** – Our keynote speaker for the Summer GardenFest this year was Shawna Lee Coronado. Shawna entertained our visitors with a wonderful presentation on building community through gardening. While she was here, she also taped a segment with us on how to put together ornamental containers that use less water. It was a pleasure working alongside Shawna in the garden.
Cooking with Barbara – Barbara Brown, Extension Food Specialist, makes a Japanese potato salad.

Japanese Potato Salad

- 1 pound Yukon gold or russet potatoes
- 1 cup very thinly sliced English cucumber
- 1 teaspoon salt
- 1/2 cup thinly sliced onion
- 1/2 cup thinly sliced carrot
- 1 apple, peeled and cut into small cubes
- 1/2 cup Japanese mayonnaise or mayonnaise
- Salt and pepper to taste

1. Peel potatoes and cut into small pieces. Cook in boiling water until soft. Drain and put through a ricer. Cool.
2. Put cucumber in colander over another bowl and mix with 1 teaspoon salt. Let sit 20 minutes.
3. Cook carrot slices in boiling water 3 minutes. Drain well and cool.
4. Rinse cucumber and gently squeeze in a clean towel to remove excess water.
5. Mix together potatoes, cucumber, onion, carrot, apple, mayonnaise and salt and pepper to taste. Chill well before serving.

Serves 6.

Nutrition Facts
Servings per recipe: 6

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Vitamin A: 63%  Vitamin C: 34%  Folacin: 2%  Calcium: 1%  Iron: 5%  Potassium: 3%

*Sodium content does not reflect discarded salt included in soaking water. Actual sodium content will be less.

Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service

This Week in the Vegetable Garden – We are harvesting tomatillos in the garden. People often ask “How do I know when the tomatillos are ready?” One thing to look for is the cracking of the skin of the tomatillos. As the fruits fill, the paper husk will start to crack and peel around the expanding fruit. The fruits also begin to turn yellow in color. These are excellent indicators that the fruits are ready to harvest.

Announcements – The Kerr Center for Sustainable Agriculture is offering workshops in Integrated Pest Management and Sustainable Pest Control in Tulsa on July 20, and Oklahoma
City on July 27. Instructors from OSU Extension and the Kerr Center will demonstrate to small scale growers how they can reduce pesticide use and still produce an abundant crop. For more information, visit the Kerr Center Website at www.kerrcenter.com or call 918-647-9123.

Sincerely,
Kim Rebek
Oklahoma Gardening Host
Integrated Pest Management with Dr. Tom Royer: Monitoring – In this segment we continue to explore aspects of Integrated Pest Management (IPM) with Entomology Professor and IPM Coordinator Tom Royer. Integrated Pest Management or IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices including cultural and physical techniques, biological control and chemical pesticides. IPM focuses on preventing pest problems before they occur. When pest problems do arise, management options focus on those with the least possible impact on the health of humans and the environment. In this segment, we look at scouting, monitoring and collecting information in the garden.

Integrated Pest Management utilizes many simple tools and techniques to manage pests, but requires knowledge of the landscape and the insects, diseases, plants and other life in the landscape. Knowing your plants and what they should look like when healthy is the first step to recognizing a problem in the landscape. Regularly looking at the plants, or scouting, to monitor their health can help you to identify problems early on. When scouting, it is also helpful to look for signs of insects and diseases present in the landscape.

There are some tools available that can help in monitoring for insect pests. These include traps and baited lures that are hung, for example, in fruit trees. Monitoring for insects helps to identify when control measures need to be taken. In this segment, Dr. Royer shares monitoring techniques to help you keep on top of problems in the landscape.

Use of Water in Japanese Gardens – In this segment we look at the use of water in Japanese gardens. Water dominated each garden we visited in Japan. And water is ever present in Japan, from the flooded rice paddy, to the mountain streams, to the surrounding oceans and seas. So it is no surprise that it should feature so prominently in the landscape. A less obvious reason for including water in Japanese Garden design is to create visual space. In Japan, the natural landscape is very dominating. The mountains are steep and close together, forcing people to live in the narrow valleys. The valleys are also home to dairies, rice fields and other farms, and so the people live in dense communities on the land that remains. By including a large sheet of water in the garden, designers create visual space, something that is very limited in the crowded cities. From a design standpoint, open space has many advantages, it provides a place to rest the mind and eye, open space also has the potential to anchor smaller components of the design into a unified whole. Open space also provides contrast to the more detailed surroundings. These same effects are achieved when using raked gravel to represent water. In fact, the simplicity of a dry pond is very powerful in creating open or empty space. Most dry gardens include a large expanse of raked gravel, the emptiness representing the Zen concept of mu or nothingness.

Water is often used symbolically in the landscape and typically represents an ocean or sea. One interpretation for the symbolic use of water as seas relates to ancient Shinto practices in which sacred ponds were created to communicate with those gods that came from over the sea, called tōrai kami. These sacred ponds or kami-ike still exist today. Some sacred waters are considered to hold special powers, such as the waters at Kiyomizu-dera, where we drank from the Waters of Happiness. Water is also used to metaphorically cleanse or purify the spirit, a practice that extends across many cultures worldwide. For this purpose, water basins are placed at the entrances to sacred spaces and offer a place for both physical and mentally or spiritually preparing oneself to enter the sacred grounds. At Buddhist Temples, these water basins are
called tsukubai, and at Shinto Shrines they are called temizuya. A famous tsukubai at Ryoan-ji Zen Temple in Kyoto is a small stone receptacle carved with four kanji, or Japanese characters. The characters, when read together with the central square basin, translate literally as “I only know plenty”, a phrase that simply means “what one has is all one needs” a reflection of the anti-materialistic teachings of Buddhism.

Water in the landscape also has a very practical, aesthetic purpose in that it acts as a mirror, reflecting the rocks, trees and lanterns carefully placed above its surface. It also provides a stage for a magnificent collection of water loving plants. The principle players on this stage are the many varieties of iris and the water lilies we found blooming throughout the gardens.

Other inhabitants of the ponds are the famous Japanese koi. Koi are considered to be one of the strongest fish and are symbols of love and friendship. If you clap your hands while standing at the pond’s edge and the koi swim to you, you will be blessed with good fortune.

**Heian Jingu Shrine** – In this segment we visit Heian Jingu Shrine in Kyoto. The Shinto shrine was built in 1894 to commemorate the 1,100th anniversary of Heiankyo, the old name for Kyoto. The red torii, or gate, standing outside the temple is the largest in Japan. The shrine is dedicated to Emperor Kanmu, who moved the capitol to Kyoto and Emperor Komei, who was the last emperor before the capitol was moved to Tokyo.

The shrine houses four gardens surrounding the main buildings. The paths wind through the gardens in the style of a large strolling garden typical of the Edo period. The strolling gardens carry you along a path to a number of magnificent features. The south garden is a Heian style garden designed for Kyokusui-no-en, a garden party in which aristocrats would amuse themselves by composing Japanese poems. To celebrate this old tradition, the garden features seasonal haikus written about individual plants in the garden.

The east garden features a magnificent pond called Seiho-ike and a famous bridge, Taiheikaku. The garden is a glory in spring when the cherry trees come into bloom. Weeping Cherries (*Prunus subhirtella* ‘Pendula’) surround the pond and drape over the water. The trees are not pruned, but allowed to extend to great lengths. Often, the weight of the fruit-covered branches becomes too much for the tree to support. Large bamboo trellises are built to support the fruited branches.

The middle garden called Naka Shin’en was constructed in 1895. It contains the Soryu-ike pond crossed by a bridge called Garyu-kyou, the Sleeping Dragon Bridge. The stepping stones used in the bridge come from girders of Kyoto’s famous bridges from the 16th century. The pond is filled with water lilies and surrounded by a carpet of Rabbit-ear Irises (*Iris laevigata*).

**Japan Hosts/Collaborators** – In this segment we feature all the wonderful people who helped make our experience in Japan possible and memorable. Special thanks to Professor Paul Hsu from the Department of Horticulture and Landscape Architecture, and Dr. David Henneberry, Director of International Programs in Agriculture for supporting our participation in this program.

We all appreciate the generous hospitality of our hosts Mr. Yosuke Fujiwara and Mrs. Suiko Fujiwara, who own the guest house, and the many women who helped out in the kitchen. A great team of guides from the Kameoka Exchange Center joined us each day to help make our visit run smoothly. During our time together we came to know each of our guides individually.
and will remember them always.

Ms. Kiyomi Kojima, Manager at Kameoka Exchange Center
Mr. Yukio Hirai, General Manager at Kameoka Exchange Center
Mr. Masahiro Fujiki, Manager
Mr. Hirotugu Ijiri
Mr. Fuminori Kikuchi
Mr. Munetsugu Fujita, Guide and Translator
Mr. Seiki Fujita, Guide
Miss Margaret Mann, Translator and Coordinator in Kameoka City
Mr. Hiroshi Kameda, Guide and Translator
Ms. Takako Kobatake Guide and Translator

In Tokyo Mr. Masanori Sato served as our guide and made sure we all made it to where we needed to be each day.

On several occasions we interacted with citizens of Kameoka. Some of which joined us for a garden tour, others worked alongside us in the gardens at the Kameoka Exchange. We learned a great deal from the Kameoka Youth Gardeners Association under the direction of Mr. Nonomura. Another special group of Kameoka citizens was the Rose Rock Group, which takes its name from Oklahoma’s famous rose rocks. The members of this group have all visited Oklahoma in the past.

Special thanks to the Mayor of Kameoka, Mr. Masataka Kuriyama, to Professor Ken Kawai of the Kyoto University of Art and Design for his engaging lecture, and to Ms. Yoshie Nishimoto for inviting us into her country home for lunch.

Part of our experience in Japan was to spend a day with a host family. We met our host families at a Garden party hosted by the Kameoka Exchange, where we had time to get to know one another while we sang songs and ate Japanese style barbeque. We give many thanks to all the families for inviting us into their homes.

4-H Centennial Garden – In this segment, Kim is joined by a team of 4-H students who helped design and install a very special garden in the studio. 4-H is a youth development program operated through the Cooperative Extension Service. To celebrate the 100th Anniversary of 4-H in Oklahoma, a group of 4-H students joined forces with the Oklahoma Gardening team to design and install the “4-H Centennial Garden”. This beautiful garden features native grasses, vegetables, a birthday cake-shaped water feature, and of course, clover! The students tell us all about the process they followed to design and install this wonderful garden. The team was led by Jessica Stewart, 4-H Coordinator of Special Programs and Promotions and included the following team members:

<table>
<thead>
<tr>
<th>Jeremy Arnett</th>
<th>Faith Howell</th>
<th>Aubrey Snider</th>
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<tr>
<td>Nancy Arnett</td>
<td>Grace Howell</td>
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<td>Chance Carpenter</td>
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<tr>
<td>Toni Carpenter</td>
<td>Vickie Logan</td>
<td>Susan Weckler</td>
</tr>
<tr>
<td>Becky Carroll</td>
<td>Shelley Mitchell</td>
<td>Anthony Zetterberg</td>
</tr>
</tbody>
</table>
A number of organizations supported this project. Special thanks to all who contributed time and materials:

Atwoods of Stillwater
Bustani Plant Farm
Dixie Ferrell
Hardscape Materials Inc.
Johnson Seed Co.
Oklahoma 4-H Foundation Inc.
OSU Botanical Garden
Oklahoma Horticultural Society
Stillwater Steel and Supply
Sunshine Nursery

Thank you to all the students who worked on this wonderful garden and congratulations for a job well done.

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, makes a Japanese-style cucumber salad.

**Japanese-Style Cucumber Salad (Sunomono)**

- 2 teaspoons sesame seeds
- 2 English cucumbers
- 2 teaspoons salt
- 1/3 cup rice vinegar
- 1 tablespoon sugar
- 1/2 teaspoon low sodium soy sauce
- 1 teaspoon fresh ginger root, grated
- 1/4 cup shredded carrot

45. Toast sesame seeds in a 325°F oven until lightly browned. Set aside.
46. Slice cucumbers very thinly with a knife or mandolin. Place in colander over a bowl. Sprinkle with salt and mix well. Allow to sit 30 minutes.
47. In a small bowl combine vinegar, sugar, soy sauce and ginger.
48. Rinse cucumbers in cold water to remove excess salt. Drain well then gently squeeze in a clean towel to remove additional water.
49. Toss cucumbers with dressing. Cover and refrigerate at least one hour or until thoroughly chilled.
50. Serve in individual small bowls topped with shredded carrots and toasted sesame seeds.

Serves 6.
<table>
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*Sodium content does not reflect discarded salt included in soaking water. Actual sodium content will be less.

Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service 7/09
Lane Agricultural Center – In this episode we visit the Wes Watkins Agricultural Research and Extension Center in Lane to learn more about organic vegetable production. The extension center is housed in conjunction with the South Central Agricultural Research Center of the USDA-ARS, and together they comprise the Lane Agricultural Center. Lane houses a unique certified organic research field, where a team of scientists from both OSU-Extension and the USDA test a variety of practices for improving organic production in Oklahoma.

Dr. Warren Roberts, Associate Horticulture Professor, joins us to provide an overview of organic vegetable production and helps take some of the confusion out of the word “organic”. He also discusses ways of building healthier soils, the foundation of organic production. We also take a look at some of the studies he is conducting with tomatoes. These include an experiment with canopy cover to manage foliar diseases, grafting heritage cultivars onto sturdy rootstocks, and testing different pruning practices to maximize yields. Some of his studies are in support of the Farm-to-School program, a program that connects growers to school cafeterias as a way to provide the children of Oklahoma with healthy, fresh food choices. One such study investigates planting dates for sweet corn, to better match harvest times with the return of children to class in fall. In the same plots, Dr. Roberts is also studying combinations of organic fertilizers to identify ideal delivery systems of important plant nutrients.

Dr. Angela Davis, Research Geneticist with the USDA-ARS, shows us a demonstration field that has been established to show growers the benefits and challenges of using different types of mulches in organic herb production. In addition to the benefits of mulches to plant culture, such as reduced soil erosion, better retention of soil moisture, and weed suppression, mulches also help to keep produce clean, a great benefit to market growers. In the demonstration, Dr. Davis compares plastic mulch to straw mulch, and bare soil.

Dr. Jim Shrefler, OSU Area Extension Specialist, shares an organic weed control study with us. Managing weeds organically is a great challenge to organic growers. While plastic mulches and cultivation are effective, they can be time consuming or expensive. Dr. Shrefler and collaborator Dr. Charles Webber of the USDA-ARS, are investigating a variety of substances for use as organic herbicides. While a number of substances are available commercially, few have been rigorously tested. The team is finding some success, but notes that timing is critical. As with any management strategy, control is much better when young weeds are targeted. Likewise, some weeds are much more easily managed with organic herbicides than others.

The work conducted in organic vegetable production supports a growing industry. Recent studies show that organic production is growing by more than 20% annually. OSU Cooperative Extension works to support all of Oklahoma’s producers, both traditional and organic growers, through scientifically based research and outreach.

Sincerely,

Kim Rebek

Oklahoma Gardening Host
OBGA Affiliate Garden Showcase: Oklahoma City Zoological Park and Botanical Garden

– In this segment we visit another OBGA affiliate garden and talk with Pearl Pearson, Horticulture Curator at the Oklahoma City Zoo.

During our visit we learn about the importance of horticulture in the zoo setting and how plants are used to resemble natural habitats, create rooms, direct views and establish a park-like setting in which to enjoy the animals. One area of the zoo uses a technique called landscape emersion to make the viewer feel as though they are inside the exhibit. The zoo also features a number of native plants, which tend to have fewer pest problems and are easier to maintain. The gardens represent a variety of habitats including woodland and prairie habitats found in Oklahoma. As a botanical garden, the zoo also features a number of tropical plants as well as unique plant collections. We take a look at a few of these collections including the dwarf conifers garden outside the education building and the butterfly garden.

Plants featured in this segment include:
Deodar Cedar, Cedrus deodara ‘Prostrata’
Bald Cypress, Taxodium distichum ‘Secrest’
Ponderosa Pine, Pinus ponderosa ‘Little Joe’
Mugo Pine, Pinus mugo ‘Big Tuna’
Austrian Pine, Pinus nigra ‘Hornibrookiana’
Little Bluestem, Schizachyrium scoparium
Pinyon Pine, Pinus edulis
Echinacea cultivars, Echinacea hybrids:
  Tomato Soup
  Mac-n-cheese
  Harvest Moon
  Sunrise
  After Midnight
  Tiki Torch

Constructing a Blackberry Trellis – We plan to establish a row of blackberries and a row of raspberries in our small fruits garden next spring. This season, we are preparing the site. Blackberries will perform best in full sun. Raspberries are not heat tolerant and do not perform as well as blackberries in Oklahoma. If you choose to grow raspberries, select a site with at least 50% shade. A sloped planting site is ideal for cold air drainage in spring. Avoid low-lying areas where cold air settles. You may also consider a site that will provide protection from drying summer winds.

In selecting a planting site, we also want to avoid areas where strawberries, other brambles or solanaceous crops such as peppers, tomatoes, potatoes and eggplants have been grown. These plants all harbor verticillium wilt which can be a problem on brambles. The pathogen that causes the wilt can remain active in the soil for many years.

Brambles tolerate a wide range of soil conditions. Of course, a well-drained soil high in organic matter will provide the best results. It is a good idea to cultivate the soil deeply and incorporate manure or compost. This will also help build the nitrogen content of the soil. Beds can be raised to enhance drainage. Beds should be 6 to 10 inches high and 2 to 3 feet wide. The plants will
need a 2½ to 3 foot unrestricted rooting area.

Begin preparing the site a year in advance. It is much easier to manage weeds before we plant our berries. It is also important to conduct a soil test. Soil pH should fall between 6.0 and 7.0. Use lime or sulfur to adjust pH according to soil tests. We are also working ahead to prepare our trellises. Semi-erect and trailing blackberries and most raspberries require trellising. Blackberries do not necessarily require a trellis, but growing them on a trellis will improve air movement, which can help reduce disease problems, and also increase light penetration. Trellising also prevents canes from tipping over and breaking in strong winds, which is perhaps the most important reason for trellising any bramble in Oklahoma.

There are several different styles of trellis that can be used for brambles. We plan to plant erect as well as semi-trailing blackberries and will use a T-bar trellis to support both types of berry. The T-bar is fairly simple to erect. The materials we need for this include 8 foot lengths of 4’ by 4’ timber, bolts and 12 gauge wire. We will also need to secure the wire to the posts and that can be done simply by stapling it on, or I will demonstrate how to use a wire vice for this job.

Start by cutting a 2-foot section off each of the 4’ by 4’s and set those pieces aside. Set the 6 foot lengths of timber in the ground so that they extend between 3 and 4 feet above the ground, with 2 to 3 feet set in the ground for support. Make sure the posts are set firmly in the ground as they will support all the weight of our berries. Adjust the number of posts according to the length of your bed. We are using three posts for a bed length of 25 feet. Posts should be no more than 20 feet apart within each row, but closer spacing is better.

Next we will secure the cross bar to the top of the post using a bolt. The T-bar is generally placed 3-4 feet above the ground level. We need to secure it tightly. Wires are then run down each end of the T-bar. Use a durable wire or heavy monofilament line. Ours is 12-gauge wire. The wires should be secured tightly, but allow a little bit of give. Wires stretch over time and will need to be tightened each spring. The wires can be stapled onto posts, but this may make it difficult to tighten in the spring. Another option is to use a wire vice on one end to allow for easy tightening.

As you prepare planting beds and trellises for brambles, keep in mind the space requirements for these plants. Blackberries need 3 to 4 feet between plants and rows should be separated by 6 to 8 feet. This will allow plenty of room to develop a healthy root system. We will be back to plant our berries in early March.

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, shows us how to store garlic.
Storing Garlic at Home

Caution: Research performed by the National Center for Home Food Preservation confirmed that mixtures of garlic in oil stored at room temperature are at risk for the development of botulism.

Garlic-in-oil should be made fresh and stored in the refrigerator at 40°F or lower for no more than 7 days.

Regardless of its flavor potency, garlic is a low-acid vegetable. The pH of a clove of garlic typically ranges from 5.3 to 6.3. As with all low-acid vegetables, garlic will support the growth and subsequent toxin production of the bacterium Clostridium botulinum when given the right conditions. The conditions include improper home canning and improper preparation and storage of fresh herb and garlic-in-oil mixtures. Moisture, room temperature, lack of oxygen, and low-acid conditions all favor the growth of Clostridium botulinum. When growing, this bacterium produces and extremely potent toxin that causes the illness botulism. If untreated, death can result within a few days of consuming the toxic food. It is important to follow science-based directions to make sure your preserved garlic is safe.

Room Temperature Storage
Commercially, garlic is stored near 32°F. Most home refrigerators are too warm for long-term storage of garlic. Instead, store it in a cool, dry, well-ventilated place in well-ventilated containers such as mesh bags. Storage life is 3 to 5 months in a cool (60°F), dry, dark location.

Freezing Garlic
Garlic can be frozen in a number of ways.
1. Chop garlic, seal tightly in plastic freezer bag, freeze.
2. Freeze garlic unpeeled in glass jars or plastic freezer boxes. Remove cloves as needed.
3. Peel cloves and puree with oil in a blender or food processor using 2 parts oil to 1 part garlic. Puree will stay soft enough in freezer to remove small amounts to use in sautéing. Freeze this mixture immediately—do not store at room temperature. The combination of low-acid garlic and room-temperature storage can support the growth of Clostridium botulinum.

Canning Garlic
Canning of garlic is not recommended. Because it is a low-acid food it would require pressure canning to be properly processed. Garlic processed this way would lose most of its flavor. No processing times have been determined to safely can garlic.

Storing Garlic in Wine or Vinegar
Peeled cloves may be submerged in wine or vinegar and stored in the refrigerator for about 4 months. Discard both the cloves and the liquid if there are signs of mold or yeast growth on the surface of the wine or vinegar. The garlic-flavored liquid and garlic cloves may be used as flavorings for food. Do not store the mixture at room temperature because it will rapidly develop mold growth.

Barbara Brown, Food Specialist, Oklahoma Cooperative Extension Service

Sincerely,
Kim Rebek, Oklahoma Gardening Host
OBGA Affiliate Garden Showcase: University of Central Oklahoma – In this segment we visit the Botanical Gardens at the University of Central Oklahoma (UCO) in Edmond. The Central Gardens of UCO joined the Oklahoma Botanical Garden and Arboretum in 2008. UCO President Roger Webb announced the goal of creating a botanical garden on the campus of UCO in 2006. The first ten theme gardens were dedicated on September 21, 2007 in celebration of the Oklahoma Centennial. These gardens are only the beginning of an expanded group of gardens that will be enjoyed by visitors to campus and will serve as a resource for educating students and the public about botany, ecology, horticulture, conservation, landscaping and more. Robert Nall, Assistant Vice President of Facilities, provides us with a little background regarding the gardens.

We are also joined by Dawn Holt, a faculty member in Computer Science, whose diverse background includes a Master’s degree in Landscape Architecture. Dawn is heavily involved with the development of the Central Gardens, and shares information with us on one of the theme gardens, The Cactus Bed. Plants featured in this garden include Sedums (*Sedum sediforme, S. tetracetinum, and S. spurium ‘Tricolor’), Dessert Willow (*Chilopsis linearis ‘Monbews’), Prickly Pear Cactus (*Opuntia* sp.) and Blue Beaked Yucca (*Yucca rostrada*).

The gardens are also used as a living laboratory for a variety of classes on campus. Professor of Biology Gloria Caddell shares with us the more academic side of the gardens.

**New Plant Introductions** – We have started a garden featuring new plant introductions for the year. This offers us a place to try out new varieties and see what works well in Oklahoma. In this segment, we take a look at a few of the new cultivars.

**Variegated Ajuga** (*Ajuga x bastarda ‘Sparkler’*) – This new cultivar from Terra Nova Nurseries has thick, dark green, shiny foliage covered in creamy-white splashes that light up the darker corners of your garden. This ajuga is a perennial and will be hardy throughout the state. It is a fast growing groundcover that stays under 10 inches, and spreads about 2 feet. With the bright foliage, ‘Sparkler’ also makes an excellent accent plant.

**Heuchera ‘Plum Royale’** – ‘Plum Royale’ is the first Heuchera to have amazing, shiny purple leaves all summer! The plant combines well with silver foliage plants like ‘Silver Mound’ Artemisia. Winter foliage is silver with a purple tint. ‘Plum Royale’ is wonderful as an accent or planted en masse. The plant has excellent vigor, and a mounding, compact habit.

**Heuchera ‘Midnight Rose’** – This amazing compact plant has burnished black leaves, thickly spotted hot pink in spring. Summer leaves lighten and cream and pink dots adorn the foliage. The spots start small and expand with the foliage, so watch them grow.

**Heucherella ‘Sweet Tea’** – This Heucherella has huge cinnamon colored leaves that are surrounded by the loveliest orange tea colored borders. The big, palmately cut leaves darken in the summer and lighten up again in the fall. The plant has a big bold habit and is heat and humidity tolerance.

**Heucherella ‘Stoplight’** – This plant has bright yellow leaves and a large ‘Stoplight’ red blotch in
center during spring. Compared to ‘Sunspot’, the leaves are 3 times larger with a bolder darker center blotch. Flowers are white. Summer foliage changes to straw-yellow or green-yellow. Henna or Lawsonia inermis is a tropical plant from North Africa. It is best known for its use as a dye to color hair or create body art. The dye is made from the leaves of the plant. The flowers are just as interesting. They have a delightful perfume scent and have been used in perfumes for millennia. The plant grows in full sun and forms a 2½ foot mound.

A new Zinnia in the Zahara series brings us a delightful yellow. This plant is touted for its heat tolerance and disease resistance. It has very low water needs, yet flourishes through the heat with large yellow blooms. Flowers attract bees and butterflies to the garden. The Zahara Yellow Zinnia forms a low mound to 18 inches and is excellent in those hot, dry spaces.

Bronze Sea Berry or Haloragis ‘Bronze’ has unique coppery orange colored leaves. This plant is native to New Zealand and is hardy to zone 8, so in the southern parts of the state you can winter it, even in zone 7 you may have some luck if you protect it over the winter. Plants tolerate full sun to partial shade and grow 1 foot high by 2 feet wide. They look great spilling out of containers. Make sure to give your Sea Berry plenty of water.

Deep Blue False Vervain or Stachytarpheta jamaicensis is most notable for its brilliant blue blooms. It is often difficult to find a true blue flower, but the vervain does not disappoint. This tropical thrives in full sun and is a favorite of hummingbirds and butterflies. The plant blooms prolifically even through the heat.

Coreopsis ‘Redshift’ is like growing two plants in one. It produces truly unique blooms that change in color over time and with temperature. In the heat of the summer, blossoms are a butter yellow, streaked with red and a bright red center. In cooler weather, the flowers take on an entirely different appearance, with burgundy petals. As the flowers mature, they shift through all shades of red to pink, to yellow, and ending with a creamy finish. Plants reach 2 to 2½ feet high and thrive in the summer sun.

‘Cardinal Red’ is a Proven Winner Geranium (Pelargonium) hybrid from the Fantasia™ series. It has huge semi-double blooms and attractive dark green leaves. It is vigorous and tolerates the heat well. Like all geraniums, keep the plant deadheaded to promote more blossoms. ‘Cardinal Red’ has a nice mounding habit reaching about 12 inches around. It will bloom all summer long in our hottest sun.

Angelonia ‘Carita Raspberry’ is a delightful plant with incredible color. Angelonia proves tough through the summer and this one keeps producing raspberry blossoms. The plants are drought tolerant and look wonderful planted in mass.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, cooks a garbanzo and okra gumbo.

This Week in the Vegetable Garden – This week in the vegetable garden we are installing deer fencing. Many of our most common vegetables are frequently browsed by deer. While there are many options available for managing deer, exclusion using fences is most effective.

Deer can easily jump over many decorative fences. To keep deer out we need to use something different. Two common options are electric fences and mesh deer fences. Mesh deer fencing comes in a variety of materials including polypropylene and wire. The deer fence needs to be 8 foot tall to prevent deer from jumping over the top.
While the 8 foot fence will keep deer out, it will not keep smaller animals from crawling under the fence. For burrowers, we have installed chicken wire all the way around the base of our deer fence. The chicken wire has smaller openings than the deer fence and is buried 18 inches below the soil. It is important to make sure the two sections of fencing are secured together well without gaps.

Fences can be expensive and do not fit into every landscape, but they are often the best option to protect vegetables and heavily browsed areas. Many deer fences are constructed in such a way as to become nearly invisible from a distance, such as by placing them along a woody edge where they blend in with the surrounding shrubs and brush. If deer fencing is not an option for your garden, there are other management strategies available such as the use of repellents. OSU Fact Sheet F-6427 Ornamental and Garden Plants: Controlling Deer Damage discusses several options available to manage deer in the landscape.

Sincerely,
Kim Rebek, Oklahoma Gardening Host
Ornamental Grasses with Blue Foliage – In this segment we look at grasses with blue-tinted foliage in our Blades and Plumes Garden. These grasses can add a great deal of interest to an area and some of them make quite a focal point. The bluest of them all is the Lyme Grass (*Leymus arenarius*) cultivar called ‘Blue Dune’. It has remarkable color and holds its color year-round. The plant reaches 2 to 3 feet in height and can spread considerably by underground stems called rhizomes. In fact, in some areas of the country Lyme Grass is considered invasive, particularly in the sand dunes around the Great Lakes. Lyme Grass does not seem to be a problem in Oklahoma and other southern states, possibly because it tends to slow down in the heat. However, it is very heat tolerant and drought tolerant. We have taken extra precautions to contain the grass by planting it in a bottomless tub.

Blue Love Grass (*Eragrostis elliottii*) – This grass is not as intense in color, but has a delightful, airy texture. Blue Love Grass is native to the southeastern states and is a great addition to a sunny perennial bed or border. The plant flowers in May and holds its delicate seed heads well into winter, offering year-round interest. It forms a graceful 3 foot by 3 foot clump and looks wonderful planted in mass or planted to provide contrast in a mixed bed.

We also feature a Blue Fescue (*Fescue ovina glauca*) cultivar called ‘Elijah Blue’. The plant is very compact, forming a mound 8 to 12 inches in diameter. The foliage of this grass is also evergreen, though some browning may occur in the winter. Its small size makes it suitable for edging a bed or border, and it also makes a nice ground cover when planted en masse. The plant is often considered to be a short lived perennial as portions of the clump die out, but this can be corrected through periodic division. ‘Elijah Blue’ is drought tolerant and makes a great addition to the rock garden. It is also deer resistant.

One grass-like plant we have in our Blades and Plumes Garden is actually sedge, a close relative of the grasses. This is *Carex glauca* or Blue Sedge. It has a similar growth habitat as the Blue Fescue, with narrow, evergreen leaves forming a tight 8 to 12 inch mound. The Blue Sedge is a good choice for more shady sites where it can be used as a lovely groundcover. Blue Sedge prefers moist soils, but is fairly tolerant of a wide range of conditions and is even drought tolerant.

Switchgrass or *Panicum virgatum* is a native perennial prairie grass. It is quite adaptable and very tolerant of extreme weather conditions, it withstands drought, and tolerates heavy wind very well, as you might imagine considering it comes to us from the prairie. There are several cultivars available that have been selected for variable foliage and panicle colors. The cultivar we have here called ‘Heavy Metal’ was selected for its upright, metallic lavender-blue foliage and waxy white blooms. The flower head or panicle reaches about 109 inches in length and has an open, airy texture. The foliage turns bright yellow in the fall and the seed heads turn a dark burgundy color. ‘Heavy Metal’ is easy to grow; it tolerates a range of conditions. One cultural consideration with switchgrass is to avoid over-fertilizing.

Another prairie native with blue-tinted blades is Little Bluestem (*Schizachyrium scoparium*). The cultivar we are growing is called ‘The Blues’, and while the name of the grass is Little Bluestem, the word little is only in relation to Big Bluestem, which can reach heights of up to 10 feet. Little Bluestem plants, on the other hand, top out around four feet. ‘The Blues’ produces a dense clump of long, slender stems that take on a lavender-blue color through summer and turn a brilliant burgundy red in fall. We have our Little Bluestem growing in a
support ring, because we found that it had lodged some in the past. Too much water or fertilizer can cause plants to lodge or flop over, so be sure to set ‘The Blues’ in a well-drained site.

**Pine Health in General** – In this segment we join OSU Statewide Extension Specialists Dr. Damon Smith, Assistant Professor of Plant Pathology in Turfgrass and Horticultural Crops, and Dr. Eric Rebek, Assistant Professor of Entomology in Turfgrass and Ornamental Plants to look at pest problems in pine trees. Damon shows us examples of some very common fungal diseases found in pines, including diplodia tip blight and dothistroma needle blight. Eric takes a look at a very common form of damage to pine trees that is caused by a bird, not an insect. The bands of holes drilled in the tree trunks by the yellow-bellied sapsucker are often confused for insect damage. Many wood-boring beetles produce holes of a similar size in the tree bark as they leave the tree to mate. However, the holes produced by wood-boring insects are generally single and appear randomly across the trunks surface. Sapsuckers drill straight lines of holes in to the tree trunk as they feed. In addition to beetle damage, other insects that cause problems on pines include the pine needle scale, aphids, the Nantucket tip moth, and pine sawflies. Many pest problems occur when pine trees are under environmental stress. Trees that suffer from water stress or nutrient deficiencies are more susceptible to pathogens and insect pests. Proper irrigation, fertilization and pH management can help reduce tree susceptibility to pest problems. OSU Extension Fact Sheet EPP-7618 contains more information on common disease problems in pines and other conifers (http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2313/EPP-7618web%20color.pdf). For more information on insect pests of pines, look at Fact Sheet EPP-7164 (http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1304/EPP-7164web.pdf).

**Plant Disease and Insect Diagnostic Laboratory (PDIDL)** – In this segment we are joined by Jen Olson, Plant Disease Diagnostician for OSU’s Plant Disease and Insect Diagnostics Lab, commonly referred to as PDIDL. The PDIDL is a service of the Oklahoma Cooperative Extension Service. The primary goal of the PDIDL is to provide residents in the State of Oklahoma with both accurate diagnoses of plant diseases and insect pests and recommendations for their control. The PDIDL operates throughout the year to provide plant disease and insect identification services to extension educators, individuals, consultants, and commercial producers. The PDIDL strives to provide both accurate and timely diagnosis of the samples received. All samples received in the lab are examined for plant disease based on symptoms and the presence or absence of pathogens (microorganisms that cause disease). Diagnostic replies are sent by mail and include a diagnosis, recommendations for control, and supplemental information when available. The following outlines the proper steps to follow in collect plant and soil samples.

**Collecting plant samples:**
- Collect several plant specimens showing various stages of disease development. Select plants that are still alive.
- Collect the entire plant whenever possible. Plants should be dug (not pulled) to keep the roots intact.
- For tree samples, the branches sent in should be at least 8 inches long.

**Plant sample packaging:**
- Wrap the roots of the plant in a plastic bag so that they do not dry out. If the plant is already potted then it can be left in the pot for shipping.
- Wrap the entire sample in plant bags to keep it from drying out (exceptions: wrap fleshy fruits beginning to decay and mushrooms in newspaper).
- Place the plant in a sturdy box or mailing tube. Do not add water or wet paper towels.
Send a detailed history explaining the disease symptoms, when disease began, name, address, and phone number.

Collecting soil samples:
- Take several soil samples in an area showing possible nematode damage. Collect the soil at a depth where the root concentration is the greatest (1-12 inches). Mix the samples from the area.
- Remove a single 1 pint sample for nematode analysis.

Soil sample packaging:
- Place soil in a non-vented plastic bag. Label the bag with collection date, location, and crop.

Soil and plant samples should first be taken to your county Cooperative Extension Office for identification. Extension educators at your local office are trained to assist in identifying plant problems. In some cases, particularly with less common pests, the county educators may need assistance in identifying the cause of the problem. In this case, they will direct you toward the PDIDL.

Submitting a sample to PDIDL:
- Before submitting a sample, please complete a Plant Disease or Insect Diagnostic Request Form and submit it with the sample.
- Mail first class in a sturdy box or take it to your county Cooperative Extension Office to have it shipped.
- Submit sample and form to:
  Plant Disease and Insect Diagnostic Laboratory
  Entomology and Plant Pathology
  Oklahoma State University
  127 NRC
  Stillwater OK 74078-3033

This Week in the Vegetable Garden – We are visiting with OSU Vegetable Extension Specialist Lynn Brandenberger to learn about the Oklahoma Market Gardening School. This educational opportunity is offered through a unique collaboration between Oklahoma State University, Samuel Roberts Noble Foundation, Kerr Center for Sustainable Agriculture, and Oklahoma Department of Agriculture, Food & Forestry. The goal of the program is to familiarize current and future fresh market producers with management, production, and marketing techniques for fresh produce. This eight week course is offered Tuesdays from September 22 through November 10. For more information visit: http://www.hortla.okstate.edu/pdf/okmgs.pdf.

Sincerely,
Kim Rebek, Oklahoma Gardening Host
Pine Wood Nematode – In this segment Kim is joined by OSU Statewide Extension Specialist Dr. Damon Smith, Assistant Professor of Plant Pathology in Turfgrass and Horticultural Crops, and Jen Olson, Plant Disease Diagnostician for OSU’s Plant Disease and Insect Diagnostics Laboratory to take a look at a very serious disease of pines called pine wilt. The disease is caused by the pine wood nematode (*Bursaphelenchus xylophilus*). Interestingly, the nematode is dependent upon another organism, the pine sawyer beetle (*Ergates spiculatus*), which carries the pine wood nematode from infected trees to healthy trees, thus spreading the disease. Pine wilt disease affects a variety of pine species, though the exotic pines, such as Austrian, Scotch, and Japanese black and red pine tend to be more susceptible to the disease. Stressed trees are more susceptible to both insect and disease infestation, therefore, keeping trees well-watered, particularly in times of drought, will help to protect trees against infection.

The nematodes feed within the resin canals and disrupt the flow of water through the tree. Wilting symptoms begin to appear and within a few weeks the tree dies. The disease is typified by the rapid death of the pine tree. If the wood is cut from these trees, the wood will be dry and no pitch flow will be noted. Trees suffering from pine wilt tend to hold their dead needles rather than drop them. The dead needles will point toward the ground, a symptom very characteristic of pine wilt.

If you have a pine tree that died rapidly, it is important to submit samples to the Plant Disease Diagnostic Laboratory for analysis. Rapid removal of these trees may slow the spread of the disease and reduce its severity. Proper sampling is crucial to identifying the pest problem. Cut a sample at least one inch thick from a branch that is connected to the trunk. If the tree is still living, look for a limb that contains both living and dead needles. If you have already cut down the tree, you can also submit cross section (disc) cut from the trunk.

Infested trees need to be burned before the following spring to kill the beetles prior to emergence. Do not use the infected tree for firewood unless it is all burned before spring. Do not move any firewood cut from an infected pine to another area of the state, as this could spread the disease.

Ornamental Grasses: Miscanthus Cultivars – This week in our Blades and Plumes Garden we are looking at cultivars in the species *Miscanthus sinensis*. Miscanthus grasses are native to eastern Asia, and are used extensively as an ornamental. Over 50 cultivars are available commercially, some of which have been popular in the garden for over 100 years. In some areas of the United States, species or wild types of Miscanthus have become invasive in natural habitats, but these are not the same as the ornamental cultivars used in the landscape. In general, the variegated forms of Miscanthus do not seed as readily and are less aggressive than all green forms. The best practice with any plant that poses a risk of escaping the garden is to watch nearby gardens for seedlings. If you find a particular cultivar is setting seed in the landscape, it is wise to remove and destroy the plant and replace it with a different cultivar or species. Other recommendations for responsible use of Miscanthus grasses in the landscape include purchasing only named cultivars, never purchase or plant the species or wild type Miscanthus, and consider planting native grasses if you live near a natural area.

Miscanthus is a garden favorite for its graceful, arching blades and the large, showy flower
plumes, which appear from August through October. It is a clump forming grass that performs best in full sun. The many cultivars range in size from just two feet up to about six or eight feet tall with flower spikes.

The first cultivar we are going to look at is called ‘Morning Light’. The main difference between the cultivars we are looking at is the variegation pattern. ‘Morning Light’ is noted for its very narrow green leaves with white variegation along the leaf margins. This gives the foliage a silvery appearance. ‘Morning Light’ is a very versatile grass that can be used as an accent or planted en masse. It reaches about 4 to 6 feet in height and the fine textured blades tend to stay very upright.

The variegation on the cultivar called ‘Zebrinus’ is horizontal rather than vertical, creating a banded appearance and giving rise to the common name zebra grass. The dark green leaves with golden yellow bands have a striking appearance making this a popular garden cultivar.

The cultivar called ‘Rigoletto’ has very similar variegation to ‘Variegatus’ but tends to grow slightly shorter and more erect. It also has fewer tendencies to flop over in late summer. It is still a rather large grass with the blades reaching 4 to 5 feet.

‘Adagio’ is a dwarf Miscanthus cultivar, at 2 to 3 feet it is one of the shortest cultivars available. It sports extremely narrow, silver-gray blades which turn yellow in fall. Because of its compact form, ‘Adagio’ is useful in smaller gardens. It also makes an attractive tall ground cover, and like the other Miscanthus cultivars it works well in a mixed bed or border.

‘Gold Bar’ is another Miscanthus cultivar with horizontal banding on the foliage. It has a strong upright, dense growth habit. It seems to be a slow grower, while it is reported as growing up to 4 to 5 feet ours have never stretched much beyond 3 feet in the garden. It will take some time to reach its full size. On the other hand, the compact form makes this Miscanthus a great selection for growing in containers. Most notably, though it is the bold coloration that makes this ‘Gold Bar’ stand out.

All of these Miscanthus cultivars are very easy to grow. They tolerate a wide range of soils conditions, including heavy clays, and are also tolerant of heat and humidity. The beautiful plumes and foliage should be left standing throughout the winter for visual interest and to provide protection for the crowns. Cut foliage to the ground in late winter just before new shoots appear.

Oklahoma Proven with David Hillock – In this segment Assistant Extension Specialist David Hillock joins us to present this year’s Oklahoma Proven plants. Oklahoma Proven is a plant evaluation and promotion program that began in 1999 at Oklahoma State University. The program is designed to help gardeners select plants, trees and shrubs that will grow well in Oklahoma's diverse climate. Plants chosen as Oklahoma Proven winners have demonstrated the ability to perform well with minimal inputs. Plants are nominated for the program by horticulturalists, nurserymen, and other growers from across the state. Each spring the executive committee selects four new plants to be the year’s Oklahoma Proven selections including a tree, shrub or vine, perennial and annual. Here are this year’s selections:

Arizona Cypress, *Cupressus arizonica*
Arizona cypress is a drought tolerant, evergreen tree native to the southwestern United States. In the landscape it usually reaches a height of only 20’ to 25’ and 15’ wide. The foliage can be a gray-green but usually blue-foliage and recently yellow-foliage forms are available in the trade.
Blue Ice’ and ‘Carolina Sapphire’ are common cultivars and ‘Cookes Peak’ is a selection from Cookes Peak, New Mexico with silvery-blue foliage and pyramidal form (see photograph). Arizona cypress require well-drained soil and thrive in hot, dry environments. As the tree ages, the bark exfoliates beautifully becoming mottled with patches of burnt orange and green.

- Exposure: Full sun
- Soil: Well-drained
- Hardiness: USDA Zone 7

**Chokeberry, Aronia**

There are two species in the genus *Aronia*, Red Chokeberry (*Aronia arbutifolia*) and Black Chokeberry (*Aronia melanocarpa*), both excellent landscape plants. As their common names suggest, fruit color is the major difference between the two. They both produce clusters of white flowers in spring, have excellent red fall foliage, grow to about 10’ high, and thrive in almost any soil type. ‘Brilliantissima’ is a popular cultivar of Red Chokeberry, chosen for its more compact size and abundance of red fruit. Both species are excellent wildlife plants but Black Chokeberry is getting a lot of attention as a “super fruit” for its high levels of antioxidants and can be used to make juice, jelly, or wine. *Aronia* work well massed in a naturalized setting or at the back of a border since the stems are usually bare near the base leaving room for garden perennials.

- Exposure: Sun to part shade
- Soil: Tolerant of most soils
- Hardiness: USDA Zone 4

**Mexican Feather Grass, Nassella tenuissima**

Mexican feather grass is a fine-textured clumping perennial that waves it silvery flowers in the slightest breeze. It is drought tolerant and tough despite its refined appearance and forms a clump almost two feet tall and three feet wide as the leaves arch to the sides. It tolerates a wide variety of conditions but prefers well-drained soils and it does not like to be cut to the ground in spring like other grasses. Remove only the top third of the plant to rejuvenate. It is native to prairies in Texas, New Mexico, and south to central Mexico and may reseed in the garden.

- Exposure: Full sun to part shade
- Soil: Well-drained
- Hardiness: USDA Zone 7

**Diamond Frost® Euphorbia, Euphorbia ‘Inneuphdia’**

Diamond Frost® Euphorbia is a fine-textured mounding plant used as an annual in Oklahoma. The simple white flowers bloom from spring until first frost and the plant forms a 2’ to 3’ sphere. Diamond Frost® can be used as a mass planting, alone in a container, or mixed with almost any other plant. Its fine sprays of foliage and flowers will weave through other plants making it a perfect complement for almost anything from poinsettias to petunias. It is an excellent background plant, filler, or specimen, proving to be an extremely beautiful and versatile new introduction.

- Exposure: Full sun to part shade
- Soil: Moist, well-drained
- Hardiness: Use as an annual
**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, makes a taco salad.

## Taco Salad

- 4 8-inch flour tortillas
- 1 pound ground turkey
- 1 tablespoon chili powder
- 1 14-ounce can red kidney beans, rinsed and well drained
- 1/2 cup salsa
- 4 cups shredded lettuce
- 1/2 cup shredded reduced fat cheese
- 1 large tomato, chopped
- Optional topping ingredients: additional salsa, diced green pepper, sliced green onions, sliced radishes, diced avocado, sliced black olives, fat free sour cream, light ranch dressing

6. Preheat oven to 425°F. Tear 4 large sheets of aluminum foil. Crumple each sheet into a 3-inch diameter ball and place on a baking sheet. Cover each ball with a tortilla. Spray tortillas with nonstick cooking spray. Bake 6 to 8 minutes, until golden brown.


8. Divide lettuce between tortilla shells. Top with meat, cheese and chopped tomato.


Serves 4.

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Barbara Brown, Food Specialist, Oklahoma Cooperative Extension Service 8/09

**This Week in the Vegetable Garden** – We are planting radishes, spinach and turnips. When selecting crops for your fall vegetable garden, be sure to look for varieties that have the shortest maturation time. This will ensure your crop develops before the cold weather sets in. For vegetables that do not store well, like lettuce, spread your harvest out over a longer period of time by planting in succession. Sow a quarter of your seed each week for four weeks. That way, you will have fresh lettuce for a longer period of time.

Sincerely,

Kim Rebek

*Oklahoma Gardening Host*
Cleveland County Master Gardener Demonstration Gardens – In this episode we visit the Demonstration and Teaching Gardens of the Cleveland County Master Gardeners. Jim McDaniel shares with us the background on the gardens, which were established in 2000. Since that time they have added a number of theme gardens, including the butterfly, xeriscape and Oklahoma Proven gardens. We also look at the special handicap accessible demonstration area. Each year as they expand the gardens, the master gardeners document their work in a how-to demonstration DVD as a resource for the public. The gardens serve as a resource for the community and are used by gardeners of all ages. The Master Gardeners offer a variety of classes and workshops throughout the year using the gardens as a classroom.

Theresa January, President of the Cleveland County Master Gardener Association, shares with us the many food production demonstrations in the gardens. They grow everything from peanuts to figs in the gardens, and demonstrate a variety of techniques, including square-foot gardening. All of the produce grown in the demonstration gardens is donated to Food for Friends, a non-profit organization that helps feed the hungry.

A large area of the gardens is dedicated to Native American crops. Fred Schneider, a Master Gardener and retired anthropologist has brought his passion for ethnobotany to root in this garden. Fred maintains heritage varieties of crops used by Native Americans and helps to preserve the seeds of crops like the ‘Omaha’ pumpkin (*Curcurbita pepo*) so that they do not disappear. His crops include what he refers to as the Three Sisters, and their Big Brother: corn, beans, squash and sunflowers. We also look at his use of buckwheat (*Fagopyrum esculentum*) as a cover crop. The Native American gardens also include a demonstration of a drying rack, once used to preserve squash and pumpkins for the winter months. The garden houses a series of beds displaying native Oklahoma plants that were used by Native Americans, including Prairie Dog Bane (*Apocynum cannbinum*) a plant used to make the strings of a bow.

Plants at the gardens include Desert Willow (*Chilopsis linearis* ‘Monbews’), Russian Sage (*Perovskia atriplicifolia*), Autumn Sage (*Salvia gregii*), Yarrow (*Achillea millefolium*), Buffalograss (*Buchloe dactyloides*), Red Yucca (*Hesperaloe parviflora*), Bearded Iris (*Iris germanica*), Floribunda Rose (*Rosa* species), Texas Fig (*Ficus carica* ‘Brown Turkey’), and Tropical Milkweed (*Asclepias curassavica*).
Fall Fruit Compote

- 2 cups water
- 3/4 cup dried apricots
- 3/4 cup dried plum or prunes
- 1/2 cup dried apples
- 1/2 cup dried cranberries
- 1/2 teaspoon ground cinnamon
- 1/4 teaspoon ground cloves
- 1/4 teaspoon ground cloves
- Up to 1/2 cup sugar

1. Combine water, dried fruit, spices and salt in a large saucepan over medium-high heat. Bring to a simmer. Cover, reduce heat and simmer 15-20 minutes or until fruit is tender.

2. Gently stir in sugar to taste and simmer, uncovered, about 10 minutes or until thickened. Serve warm, at room temperature or cold.

Serving Ideas: Serve as a side dish with breakfast or with roast pork or as a sauce over angel food cake.

Serves 6.

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Barbara Brown, Food Specialist, Oklahoma Cooperative Extension Service

Sincerely,
Kim Rebek
Oklahoma Gardening Host
Oklahoma Horticulture Society: Garden Tour for Connoisseurs – In this episode we visit four of the home gardens that will be featured in the Oklahoma Horticulture Society's Garden Tour for Connoisseurs. The 2009 Tour will take place on Saturday, October 3, 9 a.m. – 4 p.m., with a rain date of Sunday, October 4 from noon to 4 p.m. Behind garden gates visitors will have the opportunity to view private areas designed by several of Oklahoma City’s most distinguished professionals. Other gardens on the tour have been created by homeowners with the knowledge and skill to design, plant and develop private spaces that are unique in their presentation. Volunteers from the Oklahoma Horticultural Society and members of the Master Gardeners will be at each location to provide information and answer questions. Proceeds from the Tour support the educational goals of the Society which insures continued beautification of Oklahoma City’s private and public spaces. Tickets are $12 purchased in advance or $15 the day of the event. Children under age 6 are free. Tickets can be purchased at the gardens on the day of the event or from select retail outlets. For a list of ticket sources and for more information, visit: http://www.okhort.org/.

We visited four of the seven gardens featured on the tour. Our first visit was to the country gardens of Jennifer and Hugh Stout, located near one of Oklahoma City’s main thoroughfare. This landscape has the official designation as an Oklahoma WildScape. The extensive gardens, on five acres, are a palette for a wide variety of plant material and water gardens in a natural setting. These gardens have been featured on National Iris and Daylily Tours as well as the National Garden Writer’s Tour in 2008. A most unusual feature of the Stout gardens is an Oklahoma red rock pavilion with a rustic metal roof situated adjacent to a Koi pond. Vendor booths featuring garden accessories and plant material will be at this location offering visitors an opportunity to plan and plant for the future. Plants shown at the Stout home are American Beautyberry (Callicarpa Americana), Brazilian Rock Rose (Pavonia x gledilii), Cluster-Head Dianthus (Dianthus carthusianorum) and Coral Bean (Erythrina x bidwillii).

A place of tranquil beauty to share with family and friends has been the vision of Kitty and Dick Champlin for nearly fifty years. Dragon Wing Begonia’s in large pots hint at the treat that waits behind garden gates. Kitty continues to refine and develop their gardens while Dick encourages her every effort. In recent years they have had to adapt their efforts from a deep shade garden to a sun filled area. In a secluded spot at the back of the yard Kitty added a “trash garden” utilizing found objects. The Champlain’s gardens are a favorite stopping place for the Belle Isle neighborhood tour and the couples many friends.

As you walk to the door of Kim and Mickey Sullivan's home you are greeted by a variety of blue-foliaged evergreens including a large 'Blue Ice' Arizona Cypress (Cupressus arizonica var. glabra 'Blue Ice'). A dry creek runs through one of several island beds beneath a mixed canopy of native and unique specimen trees. Rare trees include the 'Lion's Head' Japanese Maple (Acer palmatum 'Shishigashira') and the 'Thunderhead' Japanese Black Pine (Pinus thunbergiana 'Thunderhead'). The property includes a number of intimate spaces for relaxation including a magnificent stone fireplace draped with a brilliant Pink Mandevilla (Mandevilla spp.). The planting around the patio and pool include a vibrant mix of hardy perennials and flashy tropical's. Enormous Elephant Ears (Xanthosoma sagittifolium) stretch out over a waterfall that trickles into the pool. The beautiful hardscape is complemented by rich planting of evergreens to provide year round scenery.
The gardens of Cheryl McIntosh include forty varieties of trees and shrubs in an Oklahoma WildScape setting. A grassy hillside pathway leads visitors to the Cobblestone neighborhood pond. A waterfall feature adjacent to the back patio offers an arrangement of large boulders where water cascades into river rock. A Koi pond surrounded by hostas has three distinctive bubblers recreating a tranquil place for wildlife. Plantings include trees and shrubs that provide berries and food for the fifty-two identified species of birds that frequent the gardens. Plants shown at the McIntosh home are Weeping Cherry (*Prunus subhirtella* var. *pendula*), Alaska Cedar (*Chamaecyparis nootkatensis*), Weeping Blue Atlas Cedar (*Cedrus atlantica* ‘Glauc Pendula’), Weeping Cedar of Lebanon (*Cedrus libani* ‘Pendula’), Cypress Vine (*Ipomoea quamoclit*) and Crested Cock's Comb (*Celosia cristata*).

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, makes a potato and cabbage chowder.

**Potato and Cabbage Chowder**

- 4 medium russet potatoes, peeled and cut in 3/4-inch chunks
- 14-ounces fat free, reduced sodium chicken broth
- 1 cup water
- 2 tablespoons vegetable oil
- 3 cups coarsely chopped green cabbage
- ¾ cup onion, finely chopped
- 8 ounces smoked turkey sausage, sliced in 1/4-inch rounds
- 1 medium carrot, shredded
- 1/2 cup fat free milk
- 1/2 teaspoon pepper

1. Bring potatoes, broth and water to a boil in a 3-quart saucepan over high heat. Reduce heat and simmer until potatoes are tender, 12 to 15 minutes. Set aside.
2. While potatoes cook heat oil in a 10-inch nonstick skillet over medium-high heat. When hot, add cabbage and onion. Cook 10 minutes, stirring occasionally. Add sausage and continue to cook and stir occasionally 10 minutes longer until cabbage, onion and sausage begin to brown. Add shredded carrots and remove from heat.

**Nutrition Facts**

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Calcium: 11%  
Iron: 16%  
Potassium: 38%

Modified from original source: [http://www.potatogoodness.com](http://www.potatogoodness.com)  
Barbara Brown, Food Specialist, Oklahoma Cooperative Extension Service
Blades and Plumes, Fountain Grasses – When selecting flowering grasses for the garden, the most important characteristic to consider is the form or structure of the plant. Each species and cultivar has a unique architecture that can be put to work in the garden to fill a specific role. This week we take a look at fountain grasses in the genus *Pennisetum*. We will see how the various cultivars perform quite differently in the landscape.

These first two cultivars are very compact and low growing plants in the species *Pennisetum alopecuroides*. There are a number of common cultivars, the two we have growing here are both dwarf varieties. We have ‘Hameln’ which forms a tight, 18 inch clump, and ‘Little Bunny’, which is smaller and reaches only about 12 inches. These cultivars form a strongly rounded form that contrasts the more upright form of many common landscape grasses such as Miscanthus. They make a very nice taller ground cover and are very useful in gardens with limited space.

The rounded form of ‘Hameln’ and ‘Little Bunny’ does not induce an image of a fountain. The common name fountain grass comes from the flowering habit of the grass. The furry plumes are produced in late summer into autumn on slender, arching stems. This graceful arching creates the fountain effect. The dwarf cultivars have rather stiff, upright stems and do not arch. ‘Karley Rose’ Fountain Grass does embody the fountain habit when flowering. This grass belongs to a different species, *Pennisetum orientale*, and is adored by gardeners for its pink plumes produced from July through fall. ‘Karley Rose’ grows a bit larger, reaching a height between 3 and 4 feet. It has a fine, delicate texture and the plumes look like they are almost floating on top of the foliage. ‘Karley Rose’ is very drought tolerant and is suitable for xericiscape gardens.

All three of these cultivars are cold hardy in Oklahoma: ‘Karley Rose’ is hardy to USDA Hardiness zone 6, ‘Hameln’ is hardy to zone 4, and ‘Little Bunny’ to zone 5. They provide year-round interest as they hold their foliage through the winter.

Another group of fountain grasses that we have in our grass garden are not winter hardy. These belong to the species *Pennisetum setaceum*. We must grow these grasses as annuals, which may seem like work to some gardeners when we have perennial grasses available, but this work is rewarded with striking, deeply colored purple or red foliage. ‘Rubrum’ is perhaps the most common cultivar of purple fountain grass. We just do not find this colorful foliage in any other grass. It makes a very bold statement in the garden when used as an accent. Purple fountain grass is very fast growing and will form a large clump 3 to 4 feet tall. It tends to hold a strong, arching, upright form.

One of the charms of purple fountain grass is the abundance of blooms. From mid-summer through fall, purple fountain grass is graced with numerous soft, purple-pink blooms that have sort of a fox-tail appearance. The plumes are followed by nodding seed heads. They move gracefully in the wind and add a great amount of color to the landscape.

This year we planted several other cultivars of purple fountain grass and have been very happy with their performance. Our student Horticulture Club was selling this cultivar at their annual plant sale and we just had to plant a few in our studio. It is a variegated purple fountain grass cultivar called 'Fireworks'. The color of this cultivar is simply fantastic, with burgundy-colored
mid-rib and hot pink margins! It is just striking. ‘Fireworks’ is slightly lower growing, reaching about 2 to 3 feet.

Another pair of purples we have is the ‘Prince’ and ‘Princess’ cultivars. These two cultivars are grown for their purple foliage. They typically will not flower here in Oklahoma, but they sure take the heat. While some other grasses lose their color when the temperature rises, these two grow deeper shades of burgundy and purple. ‘Prince’ has much broader, more upright leaves than other purple fountain grass cultivars and makes a very strong statement in the landscape. ‘Princess’ is a little daintier. It has narrower leaf blades and reaches only 2 to 3 feet as opposed to 4 or 5 feet for ‘Prince’. ‘Princess’ is well suited to planting in containers. Both of these cultivars are tender perennials, usually grown as annuals, but they are hardy to zone 8, so you may have success overwintering them in the southeastern part of the state, mulch the plants well to help insulate them over winter.

Finally, with a much more slender blade and compact growth habit, ‘Little Red Riding Hood’ makes an excellent selection for containers. Unlike ‘Prince’ and ‘Princess’, ‘Little Red Riding Hood’ will produce delightful plumes all season long. The dense, narrow blades have a delightful texture.

Cut Flowers with John Dole – In this segment we visit with an old friend of Oklahoma Gardening. John Dole, Floriculture Professor at North Carolina State University, is a former faculty member of OSU’s Horticulture and Landscape Architecture Department and a past guest on our program. In this segment he joins us to discuss cut flowers.

We begin with a discussion on some of the research being conducted with cut flowers, focusing in on extending vase life. We learn an interesting tip to keep our flowers looking fresh longer – feed them 7-Up, Sprite, or Sierra Mist! John helps debunk myths and wives’ tales commonly followed for extending vase life.

We also take a look at some new cultivars hitting the cut flower scene, as well as a few plants that perhaps we wouldn’t commonly think of for use in cut flower arrangements. Woody plant material adds structure and support to an arrangement. Plants such as the Ninebark (Physocarpus opulifolius ‘Diabolo® Monlo’ and ‘Coppertina’) not only add upright structure, but also rich color in foliage. The brilliant yellow stems of ‘Flame’ willow (Salix hybrid) add striking color to an arrangement while providing a vertical element. Berries also make wonderful additions to a fresh or dried arrangement, including the brilliant fruits of the Winter Beautyberry (Callicarpa Americana, cultivar ‘Welches Pink’).

We also see some of our vegetable garden crops turning up in vases. Ornamental pepper (Capsicum annuum) cultivars, such as ‘Hot Purple’ are used for their brilliantly colored fruits. Even herbs such as ‘Cardinal’ basil (Ocimum basilicum ‘Cardinal’) are used, both for their foliage, but also for the delightful fragrance they bring to the indoors.

Some of our favorite cut flower plants are turning out in bold new colors including the deep red Echinacea ‘Tomato Soup’ and its magenta relative ‘Merlot’. We also look at brilliant Gomphrena (Gomphrena globosa) cultivars ‘Audray’, a bright purple, and the pink-flowered ‘Audray Pink’. Breeders look for long stems to cut, extended vase life, and sturdiness as they search for the next best cut flower.

We wrap up the segment with pointers on taking cuttings in the landscape. While the vase life of cut flowers varies considerable, you should expect purchased flowers to last at least a week in
the vase. John encourages us to experiment with a variety of materials in the landscape for use in arrangements.

**Announcement:**
The annual Tree Care Conference will be held October 28 at the Oklahoma State University Botanical Garden in Stillwater. Dr. Megan Kennelly from Kansas State University will be the featured keynote speaker. Dr. Kennelly is an expert in pine diseases, an issue of great concern here in Oklahoma. Other speakers will address such topics as managing tree caterpillars, ways to help trees survive severe weather, basic planting and care, among others. You can find more information and a registration form at [http://www.hortla.okstate.edu/images/treecare.pdf](http://www.hortla.okstate.edu/images/treecare.pdf), or contact Stephanie Larimer at 405-744-5404.
Butterfly Gardening with John Dole – In this segment we visit with North Carolina State University Professor John Dole to discuss butterfly gardening. John studied and enjoyed butterflies throughout Oklahoma before moving to North Carolina. His book *Butterflies of Oklahoma, Kansas, and North Texas* is a great introduction to butterflies throughout the state.

Butterflies require three things, like any animal, food, water and shelter. Adult butterflies require nectar plants to meet their energy needs. A few favorites include zinnias, verbena, pentas and salvias. We discuss the differences between hybrid and species zinnia, looking at the Zahara Series and ‘Profusion’ hybrids. Butterfly larvae or caterpillars require host plants to complete their development. This means we need to tolerate a few holes in our leaves if we wish to encourage butterflies. Many caterpillars have a very narrow host range and require specific plants to complete their development. Most of us are familiar with common associations such as monarchs with milkweeds (*Asclepieas* species), swallowtails on plants in the carrot family, and fritillaries on passion vine.

A variety of products are available to encourage butterflies in the landscape. These include butterfly houses and butterfly feeders, both of which are fairly ineffective in the garden. You can make your own butterfly feeder by planting a profusion of nectar-rich plants, or by setting out plates of old fruit.

Oklahoma has 193 known butterfly species. The Oklahoma Biological Survey maintains a website [http://www.biosurvey.ou.edu/ok_butterfly.html](http://www.biosurvey.ou.edu/ok_butterfly.html) with records of butterflies in all Oklahoma counties. This is an excellent resource to find out who is flying in your corner of the state. There are many great places to visit to observe butterflies in Oklahoma. The Oklahoma City Zoological Park and Botanical Gardens house a butterfly garden, excellent for viewing these winged beauties. The *Oklahoma Gardening* studio gardens are also home to a butterfly garden that is always bursting with activity. In the Tulsa area, the Oxley Nature Center and, farther north, the Tallgrass Prairie Reserve are also great butterfly viewing grounds.

Be sure to bring a reference book along to help you in identifying the butterflies in your area. Late September and early October are also great times to watch for Monarch butterflies as they migrate through Oklahoma on their journey to wintering grounds in Mexico. Monarch butterflies will pass through by the hundreds of thousands.

Three-Cut Pruning with David Hillock – In this segment David shows us the three-cut pruning technique. If it becomes necessary to remove a large limb, do so using by using this 3-step method. The first cut is an undercut made about a foot away from the trunk across the bottom of the limb. The second cut is made further out on the limb from the first cut. This cut is made all the way through the limb removing the larger portion of the limb. The third cut removes the remaining stub and is made near the base of the limb just outside the branch collar. If you do not follow these three steps, often on smaller limbs, the weight of the limb will split the limb at the halfway point and rip or peel the bark, leaving a gaping wound. Pruning wounds should be kept as small as possible. Do not cut flush to the trunk, even in the absence of branch collars. Instead, remove limbs with bulges (branch collar) flush to the bulge, not flush with the trunk. Remove limbs without the swelling almost flush with the trunk. For more information, see Fact Sheet – HLA-6409 Pruning Ornamental Trees, Shrubs, and Vines.
**New Plant Introductions** – In this segment we feature a very colorful group of plants from our new plants garden. First is a delightful phlox hybrid called ‘Wanda’. ‘Wanda’ is a cross between the low-growing phlox species and a taller species with large flowers that seems to have adopted the best traits from each parent. Its large, fuchsia-colored blooms grace the plant spring through frost. ‘Wanda’ is a hardy perennial that performs well in full or partial sun.

We have a trio of new sun coleus (*Solenostemon scutellaroides*) adding a great deal of color to the garden. ‘Peter’s Wonder’ is a frilled delight with incredible pink, violet, cream and green colors. The doubly serrated leaf margins give the foliage immense texture.

We also have a Colorblaze™ coleus called ‘Royal Glissade’ from Proven Winners. This cultivar has jagged, moss-green leaves with raspberry veins and trim. It is certainly going to brighten up a shady corner of the garden, and will perform equally well in full sun. The name sun coleus is rather misleading, because the plants perform very well in shade, but their color is more intense in full sun. ‘Royal Glissade’ does not produce flowers so there will be no need to deadhead this cultivar.

The last coleus cultivar we have is called ‘Tuckerman Ravine’, also from Proven Winners. This cultivar is wild, wavy and full of color. Its leaves are irregularly speckled in yellow, green and red. Most of these cultivars reach a mature size around 2 feet, but can be cut back to keep them more compact. They work wonderfully in a mixed bed as well as in containers.

Gardenias (*Gardenia augusta*) are one of those plants that tend to be only marginally hardy in Oklahoma, especially in the northern portions of the state. However, over the past few years, breeders have selected plants that tolerate colder winter temperatures, allowing the plants to be planted more widely. ‘Crown Jewel’ is an extremely compact and cold hardy gardenia, hardy to USDA zone 7. Heavy June flowering will cover this plant in fragrant, double white blossoms. The dark, evergreen foliage adds winter interest to the landscape.

**Cooking with Barbara** – Barbara Brown, Extension Food Specialist, makes an Italian tomato sauce.

**Italian Tomato Sauce**

- 1 slice thick sliced bacon or pancetta, chopped
- 1 tablespoon olive oil
- 5 cloves garlic, minced
- 1/2 cup onion, chopped
- 5 medium tomatoes, peeled, seeded, chopped fine
- 1/4 cup red wine
- 8 basil leaves, chopped
- 6 cups cooked spaghetti
- 1/2 cup freshly grated Parmesan cheese

1. Cook bacon in olive oil until golden. Add garlic and onion and cook gently until onion is softened and transparent.
2. Add tomatoes, wine and chopped basil leaves. Simmer 40 to 50 minutes.
3. Serve over spaghetti or other pasta of choice or gnocchi. Sprinkle with Parmesan cheese.

**Serving Ideas:** Serve with crusty bread and a tossed salad with vinegar and oil dressing. Serves 4.
Nutrition Facts
Servings per recipe: 4

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Barbara Brown, Food Specialist, Oklahoma Cooperative Extension Service    10/09

Announcement – The Annual Tree Care Conference will be held October 28 at the Oklahoma State University Botanical Garden in Stillwater. Dr. Megan Kennelly from Kansas State University will be the featured keynote speaker. Dr. Kennelly is an expert in pine diseases, an issue of great concern here in Oklahoma. Other speakers will address such topics as managing tree caterpillars, ways to help trees survive severe weather, basic planting and care, among others. You can find more information at http://www.hortla.okstate.edu/images/treecare.pdf or contact Stephanie Larimer at 405-744-5404.
New Plants in the Garden: Natives, Tropicals and Heirlooms – New and unique plants are found all around the world, and some, in our own backyards. Natives make wonderful additions to the home landscape as they are very well adapted to local conditions. One native that we recently introduced to our gardens is the Drummond’s Aster (Aster drummondii). This perennial makes a delightful addition to the fall garden. It is very tough and will tolerate a variety of soil and light conditions. You can plant it anywhere from shade to full sun and it will bloom prolifically. The small, pale lavender blooms are produced in huge numbers, brightening up the fall shade garden.

Tropical plants offer bright blooms and a taste of the exotic. One of my favorite new additions to the gardens this summer has been the Charita hybrid called ‘Moon Walker’. This is a plant for the shade garden. It will tolerate deep shade to morning sun. It has several characteristics that help brighten up a shady spot including beautiful silvery leaves produced by hairs on the leaf surface. ‘Moonwalker’ bloomed much of the season with very large violet tubular flowers. The flowers have yellow and white throats and hang down from the stems. This is a very graceful plant to add to the shade garden.

Yellow Cestrum (Cestrum auraniacum) is another tropical that we have added to the studio this season. This plant thrives in heat and humidity. The brilliant yellow blooms develop in dense clusters that are arranged a bit like the blossoms of a lilac. Yellow Cestrum belongs to the Nightshade Family, Solanaceae. It is hardy to zone 8, so you may have luck wintering it in the southeastern portion of the state.

Another place that growers turn to find new plants is the past. Gardeners have grown numerous beautiful plants for centuries. Some of these have been passed from one garden to another, proving their worth over and over again. These heirloom plants are often quite vigorous and tolerant of insect and disease pests, as they thrived before chemicals were available. We have a southern heirloom dianthus growing here, which had been grown along the gulf coast for decades. Its deep green leaves tolerate the heat and humidity the south has to offer. And the spring floral display is incredible, gracing the plant with deep pink blooms.

SEEDS Program – In this segment we visit The SEEDS Garden, located northeast of downtown Durham, North Carolina. SEEDS is a non-profit community garden whose goal is to teach people to care for the earth, themselves and each other through a variety of garden-based programs. SEEDS houses two large garden spaces and directs a number of community outreach programs.

The Gardens at SEEDS include community garden plots tended by the local neighborhood and people from all over Durham. It also includes a cut-flower garden cultivated by DIG youth for the Durham Farmers’ Market. DIG is a youth-driven, urban farming leadership development program. DIG stands for Durham Inner-city Gardeners. It is a program that empowers teens by teaching organic gardening, sound business practices, healthy food choices and food security values. The program emphasizes sustainable living and growing practices, ecological balance, and the natural recycling of organic materials for plant health and nourishment. In addition to growing cut flowers, DIG youth are paid a stipend to cultivate organic fruits, vegetables, herbs, and mushrooms, which they sell at the Durham Farmer’s Market.
The Community Gardening program encourages Durham residents to produce their own food by providing growing space, advice, tools and other resources. SEEDS personnel believe in building community through the shared experience of gardening. A total of 25 spaces are rented out every year at a cost of $1-35 (sliding scale).

During our visit we speak with Lucy Harris, the Executive Director of SEEDS; Chris Pepe, a community gardener and SEEDS volunteer; and two of members of DIG.

Sarah P. Duke Gardens – In this segment we visit the Sarah P. Duke Gardens at Duke University in Durham. Often spoken of as "the crown jewel of Duke University," the Sarah P. Duke Garden occupies 55 acres in the heart of west campus. It is recognized as one of the premier public gardens in the United States, renowned both for landscape design and the quality of horticulture.

The magnificent Terrace Garden is the oldest part of the gardens existing today. The Italian style terraces feature Duke stone and were designed by Ellen Shipman, a celebrated landscape architect known for the elegant private gardens she created. The terrace plantings change with the seasons and are brimming with a mix of annuals and perennials, making them burst with color. The long stairwell of the terrace descends to the Fishpool. The Fishpool is home to award winning water lily cultivars trialed in the gardens each summer. Water lilies from all around the world are entered in the trials. The immense South American giant water lilies (Victoria species) are quite a sight.

The Terrace gardens are flanked to the north by the W. L. Culberson Asiatic Arboretum. Begun in 1984, the 15 acre site houses more than 1,300 Asian species and cultivars including collections of deciduous magnolias, Japanese maples, conifers, daylilies, ginger lilies and tree peonies. The Asiatic Arboretum encloses a calm lake that reflects the surrounding tree canopy. The Asiatic Arboretum demonstrates the relationships between plants of Asia and North America, long separated through plate tectonics, which once grew side-by-side and are still remarkably similar today, despite 76 million years of separation. The Asiatic gardens are dotted with gates, bridges, stone lanterns, and water basins that compliment the plant collections.

The education and information hub of the gardens is the Doris Duke Center, which is surrounded by a number of specialized gardens including a new bog garden. This garden not only features some of North Carolina’s endemic carnivorous plants, but a rich assemblage of water-loving perennials. The bog is fed from the beautiful Virtue Peace Pond above. The pond holds an extensive collection of hardy and tropical water lilies, lotuses and marginal water plants. It is the perfect spot to relax after strolling Duke’s extensive grounds.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, roasts pumpkin seeds.

Announcement – The Ozark Chapter of the American Rhododendron Society will host a meeting on Tuesday, November 3 at 8:30 a.m. at the Best Western Inn of the Ozarks, Eureka Springs, Arkansas. The event will feature speakers presenting on landscape design, Japanese maples and heat tolerant rhododendrons. The event is free and open to the public. Rhododendrons will be available to purchase. For more information contact Len Miller at 918-791-1733 or e-mail lom35@groveemail.com.

Sincerely,
Kim Rebek
Oklahoma Gardening Host
Blades and Plumes – Grasses are incredibly diverse in size and form and there is certainly a grass for every location in the landscape. The grasses we will look at today vary considerably in the functions they perform in the garden. Starting with our lowest-growing grass, Variegated St. Augustine Grass (*Stenotaphrum secundatum*) makes a wonderful groundcover. Its deeply variegated blades brighten up the shady areas of a landscape. You will often find the Variegated St. Augustine Grass listed as requiring full sun, however, as you can see, it also thrives in full shade. The grass is not hardy, so it is grown as an annual, but it grows vigorously and quickly covers an area. Another use for Variegated St. Augustine Grass is as a trailing plant in a hanging basket or container.

There are a number of native grasses in our blades and plumes garden. Native grasses make great additions to the garden as they are well adapted to local conditions. Many of these grasses do not like to be pampered. Heavy watering and fertilization tend to promote excessive vegetative growth, causing the grasses to grow very tall and flop over. With native grasses, we need to abuse the plants a little, hold back on water and fertilizer.

Most of us associate grasses with the open, sunny prairie, but there are also grasses adapted to shaded habitats. This grass is Northern Sea Oats (*Chasmanthium latifolium*) sometimes called Inland Sea Oats. It produces a dense stand even in heavy shade, reaching three to four feet in height and spreading about two feet. The grass produces lovely seed heads in the summer that look like fish on a line, these ripen in to a lovely gold in the fall and are widely used in dried arrangements. The plant seeds readily and can spread easily. In a large garden that may be desirable, if you are wishing to cover a large area. But if you want to keep the grass more contained, you will want to clip the seed heads. We enjoy the green seed heads throughout the summer, but once they start to dry and turn brown in late summer, we cut them off. This prevents the seed from dropping and new grasses from sprouting up next season.

We also have Lindheimer’s Muhly Grass (*Muhlenbergia lindheimeri*), which is not as showy in the fall as its pink cousin, Pink Muhly Grass (*Muhlenbergia capillaris*), but just as graceful. This species sports delightful blue foliage, which grows in a dense clump two feet by two feet. In fall, it sends up flower spikes well above the foliage, often reaching up to five feet. The flowers start out purplish in color, then fade to gray and hold well into the winter. Native to Texas and northern Mexico, muhly is hardy to zone 7 and is very tolerant of heat and drought. Hardy Pampas Grass or Ravenna Grass is among the largest of our ornamental grasses. It is a not a true pampas grass, rather belongs to a different species, *Erianthus ravennae*. Ravenna Grass is hardy to zone 6. It also sports lofty silver white to beige plumes that reach lengths between one and two feet. The flower heads are produced in fall and last into winter. They are used in fresh and dried arrangements. Ravenna Grass can spread by seed and become a bit weedy. It is best to cut flower heads before they drop seed.

Foerster’s Feather Reed Grass (*Calamagrostis x acutiflora*) is the favored grass of many gardeners. It has an incredible vertical form and unique, unfailing blooms from summer through winter. The foliage grows in a tight clump, three feet tall by two feet wide, with rich green, erect, slightly arching blades. The flowers are the true show stopper of feather reed grass. They start to appear in June on stalks reaching four to six feet. The feathery plumes turn a golden brown in summer and hold tight into winter. The seeds are sterile, so you will not find seedlings popping up all over the garden. The flower stems have a strong, vertical stature, which set the
plant apart from its surroundings, especially when paired with more rounded perennials.

**Rain Gardening** – In this segment we visit with professors Helen Kraus and Anne Spafford of North Carolina State University to learn about rain gardens and storm water management applications for the home landscape. Rain gardens help scrub pollution from rainwater that moves through the landscape, preventing those pollutants from entering public waterways and municipal supplies. Rainwater runoff contains metals from roof shingles, oil, grease and other fluids from automobiles that wash off driveways and roads. Phosphorous from detergents, fertilizers and pet wastes are also removed through rain gardens, as is nitrogen from similar sources. Interestingly, one of the largest sources of excess nitrogen in our water supplies comes from grass clippings and mulch washed out of landscapes.

Rain gardens should be placed in a location that maximizes the amount of rainwater intercepted as it moves through the landscape. General guidelines involve placing the rain garden no less than 10 feet from the foundation of a building, at least 25 feet from a septic system, and at least 50 feet from a well. The rain garden should not be placed at the bottom of a slope, but rather at the midpoint of the slope. As rain gardens can be beautiful additions to the landscape, you will also want to consider views of the garden when placing. The rain garden should be large enough to capture at least the first inch of rainfall, which typically contains the majority of pollutants. More information on sizing and locating the rain garden can be found at OSU’s Low Impact development website: [http://lid.okstate.edu/sustainable-homes-gardens-series](http://lid.okstate.edu/sustainable-homes-gardens-series).

A rain garden is composed of six basic components:

1. A depressed area set 3 to 6 inches lower than its surroundings
2. An amended soil filter bed
3. Mulch
4. A berm on the lower (downhill) edge
5. Plants
6. Rock or other material to slow water flow

To install a rain garden begin by selecting the location and laying out a garden hose to determine shape. The shape can be adjusted to fit the landscape, linear in a formal garden, curved in a more natural setting. Dig an appropriately sized hole to a depth of 1 to 4 feet (call OKIE before you dig!). Stockpile soil for later use. Berm up the lower (downhill) side of the garden using soil removed from the hole. The downhill edge should be raised to a height level with the uphill edge. Create an overflow outlet that allows water from large storm events to exit the garden in a non-erosive manner. Stone weirs, level spreaders, and large diameter pipe can be used as overflow outlets.

The bottom of gardens should be tilled deeply and leveled to improve infiltration. Amend the soil in the hole mixing topsoil and 3 to 4 inches of compost into every foot of native soil. Compost should be stable (well aged) and low in nitrogen and phosphorus. Composted pine bark is well suited for this purpose.

Plant and mulch the garden with 2 to 4 inches of shredded hardwood bark (avoid pine bark - it floats). Plants for a rain garden must tolerate both flood and drought conditions. It is also important to consider aesthetics when selecting plants, rain gardens are gardens after all. Plants with a dense base will trap and hold water better. Visit [http://lid.okstate.edu](http://lid.okstate.edu) for a list of suggested plants.

**J.C. Raulston Arboretum** – The J.C. Raulston Arboretum is a nationally acclaimed garden with the most diverse collection of cold hardy temperate zone plants in the southeastern United States.
As a part of the Department of Horticultural Science at North Carolina State University, the Arboretum is primarily a working research and teaching garden that focuses on the evaluation, selection and display of plant material gathered from around the world. Diverse plant collections are the foundation of J.C. Raulston Arboretum.

With growing concerns over water resources, the arboretum strives to demonstrate a variety of garden practices, plant materials, and water management strategies in its display gardens. Two demonstrations areas demonstrating water-wise gardening are the Xeric and Scree Gardens. The xeric garden represents what we most commonly associate with the idea of low-water plantings and is filled with a wide range of flowering and succulent drought tolerant plants. Xeric plantings include cacti and other succulent plants, such as the magnificent ‘Crazy Horse’ Pulque Agave (*Agave salmiana* ‘Crazy Horse’). But a number of flowering plants are also quite drought tolerant and brighten up the xeric landscape. These include favorites such as Autumn Sage (*Salvia greggii*). One cultivar is called ‘Lipstick’ for its magnificent deep red blooms. Many grasses also fit the xeric garden, such as the brilliant ‘Pink Flamingos’ hybrid Muhly Grass (*Muhlenbergia* hybrid ‘Pink Flamingos’).

The Scree Garden is another type of xeric landscape that features a diversity of plants from dry habitats around the world including Australia, South Africa, Mexico, the Mediterranean and the southwestern United States. The scree is installed in beds with specially prepared soil mixed with a heat-expanded slate material called Perma Till. Perma Till is a manufactured product that is very light and creates large pore spaces in the soil, promoting good drainage. The scree garden is home to number of familiar perennials like rudbeckias, gaura, salvias, and buddleia or butterfly bush. Grasses, of course, are also a part of the scree landscape. We also find less a variety of euphorbias, palms and agaves.

The Klein-Pringle White Garden is well known to garden visitors. This elegant garden was the original entryway into the arboretum and was inspired by the famed white garden at Sissinghurst Castle in Kent, England. White gardens are beautiful both day and night. A wisteria-hung arbor and beautifully planted urns mark the entrance ways into the garden. It showcases white-flowered plants and plants with gray, white or silver foliage set against a dark background of hollies and conifers. A small lawn area surrounded by low stone walls provides a contrast to the bright flowers and foliage, and provides the perfect setting for a charming gazebo. A plant palette limited to shades of green, white or gray enhances a sense of serenity, and a variety of plant forms and textures provides interest year round. A small patio paved with pale stones reflects the light colors of the white garden and reinforces the theme and calmness. A small water garden sits at a corner of the patio, overhung by magnificent Natchez Crapemyrtles (*Lagerstroemia* hybrid ‘Natchez’) with spectacular mottled bark.

A magnificent perennial border flanks the 300 foot axis of the arboretum. Planted in a mosaic of herbaceous perennials, shrubs, grasses and bulbs, the border shines year-round. A path alongside the border carries visitors through the arboretum and empties into the A.E. Finley Rooftop Terrace.

A rooftop garden can be a beautiful setting while it insulates the building and reduces urban heat load. Rooftop gardens also improve water quality by absorbing and cleansing runoff. The roof of the Ruby C. McSwine Education Center was specially designed and constructed to support vegetation. Layers of growing media, special drainage elements and protective roof membranes are hidden beneath the paved and planted surfaces. Planting beds contain a mixture of sand, a special heat-expanded slate material called permatill and organic material appropriate for use on green roofs. Rooftop conditions are typically quite hot, dry, and exposed to wind. The plants
selected for these gardens must not only tolerate extreme hot conditions, but also act to moderate them to help protect the environment and make the area comfortable for the people who use the space. The plants also need to tolerate a great deal of precipitation at times. Many of the plants featured in the rooftop gardens tend to be shallow rooted and include a number of groundcovers like sedums, creeping thyme and portulaca. You can also grow a wide range of heat-tolerant perennials such as euphorbias, cacti and flowering herbs. The space is further enhanced by adding planted containers which allows us to further diversify the plant material and choose plants with deeper root systems.

The J.C.Raulston Arboretum is a plant-lovers paradise. In addition to the diverse permanent plantings, the arboretum is an official All-American Selections Trial Garden. Visitors can tour the trial gardens to see what new cultivars are coming to the market.

Sincerely,

Kim Rebek
Oklahoma Gardening Host
OBGA Affiliate Garden: Morrison Arboretum and Botanical Garden - In this segment Kim continues to feature the OBGA Affiliate Gardens with a visit to the Morrison Arboretum and Botanical Garden. Jan McSwain joins us to share the development of this garden. The success of Morrison demonstrates just how much a community can accomplish with a little teamwork. Built on ambition and funded through grants, the community pulled together to transform desolate wasteland into a beautiful arboretum and park. Each year, the community comes out to celebrate their success on Arbor Day, when they plant a new tree, such as the Weeping Mulberry (*Morus alba* ‘Chaparral’).

**Under-utilized Conifers** - In this segment Ornamental Horticulture Extension Specialist Dr. Mike Schnelle joins us to highlight a few under-utilized conifers for Oklahoma. We begin with a beautiful tree once thought to be extinct, the Dawn Redwood (*Metasequoia glyptostroboides*). The tree had been known only from fossil records until 1944, when living specimens were located in China. It has since become a popular landscape tree for its tall and fast growth, delicate foliage and colorful bark. The foliage is a bright green and turns red-brown in the fall.

Another deciduous beauty is the Pond Cypress (*Taxodium ascendens*). Related to the Bald Cypress (*Taxodium distichum*), Pond Cypress has a narrower growth habit seldom exceeding 15 feet in diameter. Pond Cypress also tends to have fewer knees and less buttressing than Bald Cypress. Yet it can still reach great heights of up to 80 feet. The tight form allows many homeowners to use Pond Cypress where Bald Cypress would be too wide. The foliage is very soft and turns a coppery-orange color in fall. In a large landscape, Pond Cypress looks beautiful planted in mass, but the tall, tight form also makes an excellent single specimen tree.

Finally we look at an evergreen conifer, the China Fir (*Cunninghamia lanceolata*). The spiky needle-like leaves are arranged in a very interesting spiral around the stems with an upward arch. On young trees, the brown bark exfoliates in strips, revealing a reddish-orange inner bark, which is quite attractive. The tree itself has the typical, pyramidal shape of many evergreens, but the branches of older trees droop somewhat. The trees tend to be multi-stemmed and sucker up from around the base. You can remove the suckers periodically to maintain a cleaner look. The unique appearance of this tree draws a great deal of attention in the landscape.

**North Carolina Botanical Garden** – In this segment we visit the North Carolina Botanical Gardens at the University of North Carolina in Chapel Hill. The North Carolina Botanical Garden has been a leader in native plant conservation and education in the southeastern United States for more than 30 years. They pride themselves as being a conservation garden encompassing eight program areas:

- Conservation through Propagation of native plants ensures that wild populations are not damaged by direct use and collecting from natural populations
- Seed Banking and Reintroduction, an ex-situ conservation program that protects germplasm reserves as a last resort against extinction in the wild and for use in reintroduction of wild populations
• The Protection and Restoration of natural areas, which recognizes the importance of habitat conservation to the survival of biological diversity and which establishes the importance of nature's own gardens, as well as human gardens
• The elimination of Invasive Species and replacement with non-invasive alternatives
• Gardening in Nature's Context, which seeks to promote plants that support native biodiversity, including pollinators and seed dispersers
• Sustainable Gardening, which seeks to promote environmentally friendly gardening practices and which involves such practices as sustainable water use, protected stream quality, xeriscaping (using drought-tolerant plants), ecocaping (planting plants in the right places according to their ecological requirements), zerscaping (working with the established plants in a landscaping plan), integrated pest management, renewable energy sources, non-toxic and sustainably produced materials, recycling and reuse
• Supplying critical information on conservation of the flora of the southeastern United States and on the Garden's conservation programs
• People-Nature Relations, which describes how important plant diversity and natural areas are to the physical and psychological health of all of us

The gardens include a wide variety of plant collections that aid in educating visitors about native plants and natural areas. These include:

Native Plant Border: The native plant border is a collection of native perennials, shrubs and small trees. It was designed to be visually interesting throughout the growing season and supplies nectar for pollinators from spring to fall. Featured throughout this collection are a number of rare plants.

Native Water Gardens: All of the aquatic plants in the water gardens are native to the southeastern United States. This collection includes elegant American White Water Lilies (Nymphaea odorata) and American Lotus Lilies (Nelumbo lutea) as well as emergent plants like Heartleaf Pickerelweed (Pontederia cordata) and many others.

Carnivorous Plant Collection: The carnivorous plant collection is known as one of the best in the Southeast. Numerous species of pitcher plants, sundews, and butterworts are found in the southeastern United States as are Venus' Flytraps. These are cultivated in five raised beds. In addition to the carnivorous plants, these beds include some of the showier plants commonly found in pitcher plant bogs such as orchids, meadow beauties and the pine lily.

Garden of Flowering Plant Families: The Garden of Flowering Plant Families is a place where visitors find a visual representation of the evolutionary relationships between plant groups. Collections such as this were historically more prominent in botanical gardens. Here, familiar and exotic representatives of various plant families grow side by side.

Plants featured in these gardens include:
• Venus Fly Trap, Dionaea muscipula
• Pitcher Plant, Sarracenia species
• Hybrid Pitcher Plant, Sarracenia x ‘Dixie Lace’
• White-top Pitcher Plant Sarracenia leucophylla ‘Tarnok’
• Longleaf Pine, Pinus palustris

Coastal Plain and Sandhills Habitat Gardens – The Coastal Plain and Sandhills Habitats represent the wide range of ecosystems present in the eastern part of the state, beginning with the rolling sandhills where you see the state tree of North Carolina, the Longleaf Pine (Pinus
Soon the terrain becomes flatter, simulating the pocosin and wetland habitats common on the outer coastal plain. In this area they grow Myrtle (*Myrica cerifera*) and carnivorous plants, such as the Venus’ Flytrap (*Dionaea muscipula*) and Pitcher Plants (*Sarracenia* species). This natural habitat garden is burned yearly to simulate processes that are part of the endangered Longleaf Pine ecosystem. Fire plays an important role in promoting the growth of a high diversity of plants here and in the real pine savannas of the state.

**Japanese Bloodgrass** – In this segment we look at a beautiful, but controversial grass. Japanese Blood Grass (*Imperata cylindrica*) is a showy grass that will grow in sun or shade, and is a hardy perennial. Japanese Blood Grass can be very aggressive and the species or wild type is listed by the U.S. Government as a noxious weed, meaning it cannot be sold on the market. However, there are a number of cultivars that are available commercially, such as ‘Red Baron’ or ‘Rubra’. These are considered less aggressive. Sometimes, these red-colored cultivars revert back to the wild species, which has all green foliage. These all-green plants produce seed and are incredibly invasive, they should be destroyed. While blood grass offers very unique coloration, it may be best to look for colorful foliage in another plant species.

**Ginger Lily** – In this segment we take a look at a plant that the *Oklahoma Gardening* staff find very special. White Butterfly Ginger Lily or simply Ginger Lily (*Hedychium coronarium*) is a tropical perennial and a cousin of culinary ginger. While it is considered tropical, it is cold hardy to zone 7b. In fact, in our Stillwater studio garden (officially now classified as zone 7, but historically in zone 6b), we have successfully overwintered this plant for a number of years. Ginger Lily plants tolerate an occasional light freeze and frost, but a hard frost kills the plant back to the ground. The plant will overwinter and re-grow from rhizomes in the spring. Ginger Lily produces large, lance-shaped leaves up to 2 feet in length and reaches a height of 3 to 7 feet. The real treat of Ginger Lily is the flowers, which have a most delightful scent. The white butterfly-shaped flowers appear very late in the season for us in Oklahoma, but are certainly worth the wait.

Ginger Lily looks great planted in mass. It does require plenty of water, so place it in a low, wet location or use as a bog plant. While Ginger Lily can tolerate full sun in many locations, in Oklahoma it will require shade from the intense afternoon sun. We have found Ginger Lily to tolerate full shade in our studio gardens.

**Announcement** – Do you want to join the *Oklahoma Gardening* team? We are accepting application for our Garden Ambassador program. The Ambassadors are trained volunteers that help maintain the studio gardens, conduct educational programs, and assist with the production of *Oklahoma Gardening*. The deadline for applications is December 15, 2009. Classes start January 15, 2010 and run for seven weeks on Fridays from 8:30 a.m. to 3:00 p.m. at the OSU Botanical Garden Educational Building in Stillwater. For more information or an application, contact Stephanie Larimer 405-744-5404.

Sincerely,

Kim Rebek  
*Oklahoma Gardening* Host
Tree Protection with Bill Long – In this segment Bill Long, certified arborist and President of the Oklahoma Arborist Association, visits the studio to discuss winter preparation tips for trees. Winterizing trees is a year-long process and the most important tip is to make sure the tree is healthy as it enters the winter season. Of course, there are a few extra steps we can take to prepare trees for the harsh weather.

Newly planted trees may require stabilization. The base of the tree should remain steady within the ground when the trunk is shaken from side to side. If you can see the rootball move, stake the tree for winter. When it comes to staking, less is more. We only want our stake to last through the winter and no longer. Too often, people stake trees and then forget about them. Strings and ties left around the trunk as the tree develops can eventually become tight and girdle the tree, killing it. Always remove stakes in the spring. The same is true of trunk wraps. Some trees are prone to winter damage from alternating freezing and thawing, particularly on the southern-exposed portion of the trunk. Wrapping the trunk can help prevent this problem, but again, wraps must be removed in spring.

Both newly planted and established trees need to be watered regularly throughout the winter if there has not been sufficient rain or snowfall. It is also a good idea to mulch trees both to help preserve soil moisture and to provide a little extra insulation to the rootball. Lay mulch three inches thick and pull it back an inch or so from the trunk.

Established trees should be pruned as needed to remove dead or diseased wood from the canopy. Winter is also a good time for structural pruning of most trees. Check the base of the tree for a visible root flare. The root flare is the area where the trunk meets the roots and is visible by a widening of the trunk. The surrounding soil should be at the level of the root flare. If the flare is not visible, pull back the soil and mulch from the base of the tree until the flare is exposed. Likewise, if the soil is too shallow and roots are visible, backfill with soil until the ground is level with the trunk flare.

Winter Garden Tips – David Hillock, Consumer Horticulturist, gives us gardening tips for the winter months.

November Garden Tips
Lawn & Turf
- Continue mowing cool-season lawns on a regular basis. (HLA-6420)
- Continue to control broadleaf weeds in well established warm- or cool-season lawns with a post-emergent broadleaf weed killer. (HLA-6421)
- Keep falling leaves off turf areas to avoid damage to the foliage.
Tree & Shrub
- Prune deciduous trees in early part of winter. Prune only for structural and safety purposes. Spring flowering trees and shrubs should be pruned after flowering in the spring.
- Wrap young, thin-barked trees with a commercial protective material to prevent winter sunscald.
- Watch for arborvitae aphids, which tolerate cooler temperatures in evergreen shrubs.
Flowers
- Bulbs like hyacinth, narcissus and tulip can be potted in containers for indoor forcing.
Fruits & Nuts
• Delay pruning fruit trees until next February or March before bud break.

December and January Garden Tips

Tree & Shrubs
• Continue controlling over wintering insects on deciduous trees or shrubs with dormant oil sprays applied when the temperature is above 40 degrees in late fall and winter. Do not use dormant oils on evergreens.

General
• Keep all plants watered during dry conditions even though some may be dormant. Especially broadleaf and narrowleaf evergreens and plants under eves or in raised beds and planters.
• Irrigate all plantings at least 24 hours before hard-freezing weather if soil is dry. (HLA-6404)
• Now is a great time to design and make structural improvements in your garden and landscape.
• Send for mail-order catalogs if you are not already on their mailing lists.
• Till garden plots without a cover crop to further expose garden pests to harsh winter conditions.

OBGA Affiliate Garden: Jo Allyn Lowe Park and Arboretum – In this segment we visit another OBGA affiliate garden, Jo Allyn Lowe Park and Arboretum in Bartlesville. Chuck Parkin joins us to tell about the creation and development of the park. Jo Allyn Lowe Park was created in 1980 from land donated by Harold and Carolyn Price in 1971 and Joe and Etsuko Price in 1979. It covers 32 acres of water and rolling land. Harold Price and Phillips Petroleum Company provided most of the funds for the Park's development and when it was completed it was dedicated to Joe Allyn Lowe, the beloved founder of the Bartlesville Boys Club. One of the main features of the Park is the arboretum. Funded mostly by donations, there are hundreds of species of trees present, many planted in memory of loved ones or organizations. A more recent addition includes a grove of 'Historical Trees', trees grown from seeds or cuttings taken from trees of historical importance. Among these are cuttings of Johnny Appleseed’s Apple Tree (Malus species) and a River Farm Chaste Tree (Vitex species).

Walkers and joggers enjoy the many paths that surround the lake and wind through the adjacent prairie where abundant wild flowers change with the seasons. Spotted around the circumference of the prairie are flower gardens created and maintained by several of Bartlesville's Garden Clubs including the green Country Garden Club.
Tomato and Sausage Soup

- 8 ounces sweet or spicy Italian turkey sausage links
- 1/2 cup diced yellow onion
- 1 clove garlic, minced
- 2 cups fat-free reduced sodium chicken broth
- 2 cups canned diced tomatoes, undrained
- 1 cup canned white beans, rinsed and drained
- 2 tablespoons chopped fresh basil or 1-1/2 teaspoons dried basil
- 2 tablespoons chopped fresh oregano or 1-1/2 teaspoons dried oregano
- 10 ounces frozen chopped spinach, thawed and drained
- 2 tablespoons grated Parmesan cheese
- 2 tablespoons chopped basil, optional

51. Remove casings from sausage. Add sausage to large saucepan and heat over medium heat. Stir sausage until browned, breaking up with a spoon as it cooks. Drain fat.
52. Add onion and garlic to pan with sausage. Cook and stir until onion becomes translucent and just begins to brown.
53. Add broth, undrained tomatoes, white beans, 2 tablespoons basil (or 1 tablespoon dried basil) and oregano. Bring to a boil, cover, reduce heat to a simmer and continue cooking 10 minutes. Add spinach, heat through and remove from heat.
54. Ladle into 4 bowls. Divide Parmesan and fresh basil (if using) over bowls.

Serves 4.

Nutrition Facts
Servings per recipe: 4

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Modified from original source: [http://find.myrecipes.com/recipes](http://find.myrecipes.com/recipes)
Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service

Sincerely,
Kim Rebek
Oklahoma Gardening Host
OBGA Affiliate Garden: Will Rogers Horticultural Gardens and Arboretum – In this segment we visit with Allan Storjohann and Louis Scott at Will Rogers Park in Oklahoma City. These historic gardens comprise the northern side of Will Rogers Park, one of Oklahoma City’s oldest park properties, and are operated and maintained by the Botanical Gardens Division of the Parks & Recreation Department. Inside the garden walls, visitors are surrounded by thousands of roses, irises, azaleas, daylilies and peonies among other colorful flowers and plants.

The historic Ed Lycan Conservatory houses the largest cacti and succulent collection in Oklahoma. The conservatory is a historic Lloyd & Burnham greenhouse. It was originally erected in Douglass Park in 1924 and relocated to its current location in the Will Rogers Gardens in 1936. The conservatory will undergo a renovation in 2010.

The Charles E. Sparks Rose Garden is a formal rose garden with more than 85 different varieties of roses in bloom from April through October. Horticulture staff at the Will Rogers Gardens work with gardeners and horticulturalists from around the country to test new rose hybrids for their viability in Oklahoma climates. The rose garden is surrounded by two lakes and is adjacent to the Margaret Annis Boys Arboretum. The arboretum sits on 10 acres of pristine park land and features hundreds of varieties of trees, including Oklahoma native species as well as specimens rarely found in the state. The oldest trees in the arboretum were planted by famed horticulturalist Henry Walter in the 1930s. The arboretum was renamed the Margaret Annis Boys Arboretum during a dedication ceremony on September 24, 2009. Thanks to a generous gift from the Oklahoma City Community Foundation, the arboretum will undergo extensive renovation work in 2010.

The Will Rogers Garden Exhibition Center hosts multiple garden-related events and club meetings throughout the year. It also hosts its own series of FREE EDUCATIONAL WORKSHOPS for both the casual backyard landscaper to the expert greenthumb.

Grape Trellises with Eric Stafne – In this segment Horticulture Extension Specialist Eric Stafne joins us to look at a variety of trellis systems that can be utilized for growing grapes. We look at three systems used for different types of grapes. The first is a multi-wire system used to support grapes that have an upright growth habit. In this system, the trunk branches out around waist height and the resulting vines are woven through the upper wires of the trellis for support. This helps to maximize sun exposure on the leaves.

Other grape cultivars have more of a draping growth habit and require a different system. The Geneva double-curtain is used for very vigorous varieties that produce lengthy vines. In this system, the trunk is grown about 4 feet at which point two permanent cordons branch off. Each cordon is trained out to run along a supporting wire, approximately 3 feet apart. Along the cordon are the spurs that produce the fruiting canes, which hang down towards the ground like a curtain. Hence the canopy has been divided into two 'curtains'. The system aims to improve grape quality by reducing shade within a dense canopy and improving exposure to light.

The final system we look at is the most common trellis used for backyard grape production. It is a two wire system in which the trunk is grown to about 5 feet, then branched into 2 cordons, one
growing in each direction along the top wire. The lower wire is mainly for support of the trunk as it grows upward. The foliage drapes down, as in the double curtain. This single curtain system is used for less vigorous grape varieties.

**Winter Plant Protection** – David Hillock, Consumer Horticulturist, shares information about winter plant protection.

**Cooking with Barbara Brown** – Barbara Brown, Extension Food Specialist, makes a broccoli and pecan casserole.

**Broccoli and Pecan Casserole**

- 4 cups broccoli florets
- 1/2 cup red bell pepper, chopped
- 1/2 cup pecan halves
- 1/4 teaspoon salt
- 1/4 teaspoon pepper
- 2 tablespoons butter or margarine, divided
- 1/4 cup reduced-calorie mayonnaise
- 2 tablespoons prepared horseradish
- 1/4 cup dry bread crumbs
- 2 tablespoons Parmesan cheese, grated

1. Preheat oven to 350°F. Spray a 2-quart casserole dish with nonstick vegetable spray.
2. Put steamer insert in medium saucepan; add 2 cups water to pan. Steam broccoli florets and chopped red pepper together 5 minutes. Drain well. Transfer to prepared casserole dish and add pecans. Season with salt and pepper.
3. Remove steamer insert from saucepan, drain and dry pan. Use hot pan to melt 1 tablespoon butter. Whisk in reduced-calorie mayonnaise and horseradish until smooth. Pour over vegetables in casserole dish and mix gently but well.
4. Sprinkle casserole with bread crumbs and cheese. Dot with remaining butter.
5. Bake 20 to 25 minutes, until golden brown

Serves 8.

**Nutrition Facts**
Servings per recipe: 8

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Modified from original source: Georgia Pecan Commission, [www.georgiapecans.org](http://www.georgiapecans.org)
Sincerely,

Kim Rebek  
*Oklahoma Gardening Host*
Poinsettia Research – In this segment we visit with Bruce Dunn, Assistant Professor of Floriculture at Oklahoma State University. Professor Dunn conducts trials with poinsettias, America’s number 1 selling container plant. This season, he has experimented with growing poinsettias at cooler temperatures. While this is not a new concept, it is not widely practiced. Growing plants at lower temperatures provides growers the benefit of lower heating costs through reduced energy consumption. We look at the various results of growing poinsettias at cooler temperatures on five different cultivars: ‘Advent Red’, ‘Cinnamon Star’, ‘Silver Star Marble’, ‘Polar Bear’ and ‘Mars Marble’.

Mulching Strawberries – Strawberry plants benefit from a winter covering of straw or similar mulch. Winter mulch reduces freeze and thaw cycles that can damage the plant crowns. Freezing and thawing of the soil also causes soil heaving, which can push plants out of the ground. This is especially a problem with shallow-rooted plants like strawberries. We also see heaving commonly in our ornamental beds among plants like heuchera. Another benefit of winter mulch is to reduce the drying effects of the wind.

The best time to mulch strawberries is in early to mid-December, after several hard frosts. By this time the plants have developed cold hardiness. If you cover plants too early they may not become hardy enough to sustain winter temperatures.

Cover plants loosely to a depth of 3-4 inches across the entire row. A bale of straw should cover about 100 square feet. The straw needs to be removed as soon as plant growth begins in the spring, usually around mid-March. Winter mulch has the additional potential benefit of delaying plant development and flowering in the spring, which can help in avoiding spring frost injury.

Holiday Gifts – In this segment we look at great gift ideas for gardeners. Birds are as much a part of the landscape as plants and there are many gifts for the birder on your list. In addition to bird feeders and houses, try something different with the Birdsong IdentiFlyer kit (www.identiflyer.com).

Books and magazine subscriptions are wonderful resources for gardeners. Other ideas include gift certificates to local nurseries and gift memberships to botanical gardens and garden or plant clubs, like the Oklahoma Horticultural Society.

We also feature a rain barrel for those concerned about water conservation. A great diversity of rain barrels is available commercially. We feature Fiskars® Tuscany rain barrel (www.rain-barrel.com).

Finally, we look at collapsible vases, which are inexpensive, store compactly and are a great way to give holiday bouquets.

New and Upcoming Poinsettia Cultivars – In this segment we look at several poinsettia cultivars both under development and those available this season. Bruce Dunn shares several cultivars he is trialing from two producers, Syngenta and Eckes. Featured cultivars include: ‘Orion Early Red’, ‘Cortez Burgundy’, ‘Mira White’, ‘Topaz’, Unnamed pink cultivar, ‘Orange Spice’, ‘Winter Rose Early Red’ and ‘Winter Rose White’.

Cooking with Barbara Brown – Barbara Brown, Extension Food Specialist, shows us how to
make dark chocolate dipped dried fruit.

Announcements –

Oklahoma State University’s 19th Annual Poinsettia Sale
Thursday and Friday, December 3 & 4 from 7:30 a.m. – 5:30 p.m.
OSU Teaching Greenhouse on Farm Road (south of Colvin Center, east of tennis courts)

New Ambassador Class
Do you want to join the Oklahoma Gardening team? We are accepting applications for our Garden Ambassador program. The Ambassadors are trained volunteers that help maintain the studio gardens, conduct educational programs, and assist with the production of Oklahoma Gardening. The deadline for applications is December 15, 2009. Classes start January 15, 2010 and run for seven weeks on Fridays from 8:30 a.m. to 3:00 p.m. at the OSU Botanical Garden Educational Building in Stillwater. For more information or an application, contact Stephanie Larimer 405-744-5404.

Global Horticulture Conference
The OSU Department of Horticulture will host a Global Horticulture Conference on Wednesday, December 2 from 8:30 a.m. until 5 p.m. on the Stillwater campus in the Robert M. Kerr Food & Agricultural Products Center. Come learn about horticulture happenings the world over. For information contact Stephanie Larimer at 405-744-5404 or visit the Department’s webpage at www.hortla.okstate.edu.

Dark Chocolate Dipped Dried Fruit

- 2 cups dark chocolate, chopped
- 1 pound medium to large pieces of dried fruit


2. To melt candy, put chocolate in a microwaveable bowl. Microwave on HIGH 45 seconds. Remove bowl, stir chocolate, return bowl to microwave and cook on HIGH 30 more seconds. Stir. If not melted continue cooking for 30 second intervals, stirring between each, until chocolate is melted and smooth.

3. Dip dried fruit about halfway into the melted chocolate. Place on waxed paper to set.

Makes about 3 dozen pieces.

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Barbara Brown, Food Specialist
Oklahoma Cooperative Extension Service

Sincerely,

Kim Rebek
Oklahoma Gardening Host
Pine Wood Nematode – In this segment Kim is joined by OSU Statewide Extension Specialist Dr. Damon Smith, Assistant Professor of Plant Pathology in Turfgrass and Horticultural Crops, and Jen Olson, Plant Disease Diagnostician for OSU’s Plant Disease and Insect Diagnostics Laboratory to take a look at a very serious disease of pines called pine wilt. The disease is caused by the pine wood nematode (*Bursaphelenchus xylophilus*). Interestingly, the nematode is dependent upon another organism, the pine sawyer beetle (*Ergates spiculatus*), which carries the pine wood nematode from infected trees to healthy trees, thus spreading the disease. Pine wilt disease affects a variety of pine species, though the exotic pines, such as Austrian, Scotch, and Japanese black and red pine tend to be more susceptible to the disease. Stressed trees are more susceptible to both insect and disease infestation, therefore, keeping trees well-watered, particularly in times of drought, will help to protect trees against infection.

The nematodes feed within the resin canals and disrupt the flow of water through the tree. Wilting symptoms begin to appear and within a few weeks the tree dies. The disease is typified by the rapid death of the pine tree. If the wood is cut from these trees, the wood will be dry and no pitch flow will be noted. Trees suffering from pine wilt tend to hold their dead needles rather than drop them. The dead needles will point toward the ground, a symptom very characteristic of pine wilt.

If you have a pine tree that died rapidly, it is important to submit samples to the Plant Disease Diagnostic Laboratory for analysis. Rapid removal of these trees may slow the spread of the disease and reduce its severity. Proper sampling is crucial to identifying the pest problem. Cut a sample at least one inch thick from a branch that is connected to the trunk. If the tree is still living, look for a limb that contains both living and dead needles. If you have already cut down the tree, you can also submit cross section (disc) cut from the trunk.

Infested trees need to be burned before the following spring to kill the beetles prior to emergence. Do not use the infected tree for firewood unless it is all burned before spring. Do not move any firewood cut from an infected pine to another area of the state, as this could spread the disease.

Ornamental Grasses: Miscanthus Cultivars – This week in our Blades and Plumes Garden we are looking at cultivars in the species *Miscanthus sinensis*. Miscanthus grasses are native to eastern Asia, and are used extensively as an ornamental. Over 50 cultivars are available commercially, some of which have been popular in the garden for over 100 years. In some areas of the United States, species or wild types of Miscanthus have become invasive in natural habitats, but these are not the same as the ornamental cultivars used in the landscape. In general, the variegated forms of Miscanthus do not seed as readily and are less aggressive than all green forms. The best practice with any plant that poses a risk of escaping the garden is to watch nearby gardens for seedlings. If you find a particular cultivar is setting seed in the landscape, it is wise to remove and destroy the plant and replace it with a different cultivar or species. Other recommendations for responsible use of Miscanthus grasses in the landscape include purchasing only named cultivars, never purchase or plant the species or wild type Miscanthus, and consider planting native grasses if you live near a natural area.
Miscanthus is a garden favorite for its graceful, arching blades and the large, showy flower plumes, which appear from August through October. It is a clump forming grass that performs best in full sun. The many cultivars range in size from just two feet up to about six or eight feet tall with flower spikes.

The first cultivar we are going to look at is called ‘Morning Light’. The main difference between the cultivars we are looking at is the variegation pattern. ‘Morning Light’ is noted for its very narrow green leaves with white variegation along the leaf margins. This gives the foliage a silvery appearance. ‘Morning Light’ is a very versatile grass that can be used as an accent or planted en masse. It reaches about 4 to 6 feet in height and the fine textured blades tend to stay very upright.

The variegation on the cultivar called ‘Zebrinus’ is horizontal rather than vertical, creating a banded appearance and giving rise to the common name zebra grass. The dark green leaves with golden yellow bands have a striking appearance making this a popular garden cultivar.

The cultivar called ‘Rigoletto’ has very similar variegation to ‘Variegatus’ but tends to grow slightly shorter and more erect. It also has fewer tendencies to flop over in late summer. It is still a rather large grass with the blades reaching 4 to 5 feet.

‘Adagio’ is a dwarf Miscanthus cultivar, at 2 to 3 feet it is one of the shortest cultivars available. It sports extremely narrow, silver-gray blades which turn yellow in fall. Because of its compact form, ‘Adagio’ is useful in smaller gardens. It also makes an attractive tall ground cover, and like the other Miscanthus cultivars it works well in a mixed bed or border.

‘Gold Bar’ is another Miscanthus cultivar with horizontal banding on the foliage. It has a strong upright, dense growth habit. It seems to be a slow grower, while it is reported as growing up to 4 to 5 feet ours have never stretched much beyond 3 feet in the garden. It will take some time to reach its full size. On the other hand, the compact form makes this Miscanthus a great selection for growing in containers. Most notably, though it is the bold coloration that makes this ‘Gold Bar’ stand out.

All of these Miscanthus cultivars are very easy to grow. They tolerate a wide range of soils conditions, including heavy clays, and are also tolerant of heat and humidity. The beautiful plumes and foliage should be left standing throughout the winter for visual interest and to provide protection for the crowns. Cut foliage to the ground in late winter just before new shoots appear.

Oklahoma Proven with David Hillock – In this segment Assistant Extension Specialist David Hillock joins us to present this year’s Oklahoma Proven plants. Oklahoma Proven is a plant evaluation and promotion program that began in 1999 at Oklahoma State University. The program is designed to help gardeners select plants, trees and shrubs that will grow well in Oklahoma's diverse climate. Plants chosen as Oklahoma Proven winners have demonstrated the ability to perform well with minimal inputs. Plants are nominated for the program by horticulturalists, nurserymen, and other growers from across the state. Each spring the executive committee selects four new plants to be the year’s Oklahoma Proven selections including a tree, shrub or vine, perennial and annual. Here are this year’s selections:

**Arizona Cypress, Cupressus arizonica**

Arizona cypress is a drought tolerant, evergreen tree native to the southwestern United States. In the landscape it usually reaches a height of only 20’to 25’and 15’wide. The foliage can be a
gray-green but usually blue-foliage and recently yellow-foliage forms are available in the trade. ‘Blue Ice’ and ‘Carolina Sapphire’ are common cultivars and ‘Cookes Peak’ is a selection from Cookes Peak, New Mexico with silvery-blue foliage and pyramidal form (see photograph). Arizona cypress require well-drained soil and thrive in hot, dry environments. As the tree ages, the bark exfoliates beautifully becoming mottled with patches of burnt orange and green.

- **Exposure:** Full sun
- **Soil:** Well-drained
- **Hardiness:** USDA Zone 7

**Chokeberry, Aronia**

There are two species in the genus *Aronia*, Red Chokeberry (*Aronia arbutifolia*) and Black Chokeberry (*Aronia melanocarpa*), both excellent landscape plants. As their common names suggest, fruit color is the major difference between the two. They both produce clusters of white flowers in spring, have excellent red fall foliage, grow to about 10’ high, and thrive in almost any soil type. ‘Brilliantissima’ is a popular cultivar of Red Chokeberry, chosen for its more compact size and abundance of red fruit. Both species are excellent wildlife plants but Black Chokeberry is getting a lot of attention as a “super fruit” for its high levels of antioxidants and can be used to make juice, jelly, or wine. *Aronia* work well massed in a naturalized setting or at the back of a border since the stems are usually bare near the base leaving room for garden perennials.

- **Exposure:** Sun to part shade
- **Soil:** Tolerant of most soils
- **Hardiness:** USDA Zone 4

**Mexican Feather Grass, Nassella tenuissima**

Mexican feather grass is a fine-textured clumping perennial that waves its silvery flowers in the slightest breeze. It is drought tolerant and tough despite its refined appearance and forms a clump almost two feet tall and three feet wide as the leaves arch to the sides. It tolerates a wide variety of conditions but prefers well-drained soils and it does not like to be cut to the ground in spring like other grasses. Remove only the top third of the plant to rejuvenate. It is native to prairies in Texas, New Mexico, and south to central Mexico and may reseed in the garden.

- **Exposure:** Full sun to part shade
- **Soil:** Well-drained
- **Hardiness:** USDA Zone 7

**Diamond Frost® Euphorbia, Euphorbia ‘Inneuphdia’**

Diamond Frost® Euphorbia is a fine-textured mounding plant used as an annual in Oklahoma. The simple white flowers bloom from spring until first frost and the plant forms a 2’ to 3’ sphere. Diamond Frost® can be used as a mass planting, alone in a container, or mixed with almost any other plant. Its fine sprays of foliage and flowers will weave through other plants making it a perfect complement for almost anything from poinsettias to petunias. It is an excellent background plant, filler, or specimen, proving to be an extremely beautiful and versatile new introduction.

- **Exposure:** Full sun to part shade
- **Soil:** Moist, well-drained
- **Hardiness:** Use as an annual
Taco Salad

- 4 8-inch flour tortillas
- 1 pound ground turkey
- 1 tablespoon chili powder
- 1 14-ounce can red kidney beans, rinsed and well drained
- 1/2 cup salsa
- 4 cups shredded lettuce
- 1/2 cup shredded reduced fat cheese
- 1 large tomato, chopped
- Optional topping ingredients: additional salsa, diced green pepper, sliced green onions, sliced radishes, diced avocado, sliced black olives, fat free sour cream, light ranch dressing

10. Preheat oven to 425°F. Tear 4 large sheets of aluminum foil. Crumple each sheet into a 3-inch diameter ball and place on a baking sheet. Cover each ball with a tortilla. Spray tortillas with nonstick cooking spray. Bake 6 to 8 minutes, until golden brown.

11. In large skillet brown meat, breaking it into crumbles as it cooks. Drain well. Stir in chili powder, beans and salsa. Heat through.

12. Divide lettuce between tortilla shells. Top with meat, cheese and chopped tomato.

13. Serve with desired optional topping ingredients.

Serves 4.

Nutrition Facts (does not include optional toppings)
Servings per recipe: 4

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Barbara Brown, Food Specialist, Oklahoma Cooperative Extension Service

This Week in the Vegetable Garden – We are planting radishes, spinach and turnips. When selecting crops for your fall vegetable garden, be sure to look for varieties that have the shortest maturation time. This will ensure your crop develops before the cold weather sets in. For vegetables that do not store well, like lettuce, spread your harvest out over a longer period of time by planting in succession. Sow a quarter of your seed each week for four weeks. That way, you will have fresh lettuce for a longer period of time.

Sincerely,
Kim Rebek
Oklahoma Gardening Host
Ornamental Grasses with Blue Foliage – In this segment we look at grasses with blue-tinted foliage in our Blades and Plumes Garden. These grasses can add a great deal of interest to an area and some of them make quite a focal point. The bluest of them all is the Lyme Grass (*Leymus arenarius*) cultivar called ‘Blue Dune’. It has remarkable color and holds its color year-round. The plant reaches 2 to 3 feet in height and can spread considerably by underground stems called rhizomes. In fact, in some areas of the country Lyme Grass is considered invasive, particularly in the sand dunes around the Great Lakes. Lyme Grass does not seem to be a problem in Oklahoma and other southern states, possibly because it tends to slow down in the heat. However, it is very heat tolerant and drought tolerant. We have taken extra precautions to contain the grass by planting it in a bottomless tub.

Blue Love Grass (*Eragrostis elliottii*) – This grass is not as intense in color, but has a delightful, airy texture. Blue Love Grass is native to the southeastern states and is a great addition to a sunny perennial bed or border. The plant flowers in May and holds its delicate seed heads well into winter, offering year-round interest. It forms a graceful 3 foot by 3 foot clump and looks wonderful planted in mass or planted to provide contrast in a mixed bed.

We also feature a Blue Fescue (*Fescue ovina glauca*) cultivar called ‘Elijah Blue’. The plant is very compact, forming a mound 8 to 12 inches in diameter. The foliage of this grass is also evergreen, though some browning may occur in the winter. Its small size makes it suitable for edging a bed or border, and it also makes a nice ground cover when planted en masse. The plant is often considered to be a short lived perennial as portions of the clump die out, but this can be corrected through periodic division. ‘Elijah Blue’ is drought tolerant and makes a great addition to the rock garden. It is also deer resistant.

One grass-like plant we have in our Blades and Plumes Garden is actually sedge, a close relative of the grasses. This is *Carex glauca* or Blue Sedge. It has a similar growth habitat as the Blue Fescue, with narrow, evergreen leaves forming a tight 8 to 12 inch mound. The Blue Sedge is a good choice for more shady sites where it can be used as a lovely groundcover. Blue Sedge prefers moist soils, but is fairly tolerant of a wide range of conditions and is even drought tolerant.

Switchgrass or *Panicum virgatum* is a native perennial prairie grass. It is quite adaptable and very tolerant of extreme weather conditions, it withstands drought, and tolerates heavy wind very well, as you might imagine considering it comes to us from the prairie. There are several cultivars available that have been selected for variable foliage and panicle colors. The cultivar we have here called ‘Heavy Metal’ was selected for its upright, metallic lavender-blue foliage and waxy white blooms. The flower head or panicle reaches about 109 inches in length and has an open, airy texture. The foliage turns bright yellow in the fall and the seed heads turn a dark burgundy color. ‘Heavy Metal’ is easy to grow; it tolerates a range of conditions. One cultural consideration with switchgrass is to avoid over-fertilizing.

Another prairie native with blue-tinted blades is Little Bluestem (*Schizachyrium scoparium*). The cultivar we are growing is called ‘The Blues’, and while the name of the grass is Little Bluestem, the word little is only in relation to Big Bluestem, which can reach heights of up to 10 feet. Little Bluestem plants, on the other hand, top out around four feet. ‘The Blues’
produces a dense clump of long, slender stems that take on a lavender-blue color through summer and turn a brilliant burgundy red in fall. We have our Little Bluestem growing in a support ring, because we found that it had lodged some in the past. Too much water or fertilizer can cause plants to lodge or flop over, so be sure to set ‘The Blues’ in a well-drained site.

**Pine Health in General** – In this segment we join OSU Statewide Extension Specialists Dr. Damon Smith, Assistant Professor of Plant Pathology in Turfgrass and Horticultural Crops, and Dr. Eric Rebek, Assistant Professor of Entomology in Turfgrass and Ornamental Plants to look at pest problems in pine trees. Damon shows us examples of some very common fungal diseases found in pines, including diplodia tip blight and dothistroma needle blight. Eric takes a look at a very common form of damage to pine trees that is caused by a bird, not an insect. The bands of holes drilled in the tree trunks by the yellow-bellied sapsucker are often confused for insect damage. Many wood-boring beetles produce holes of a similar size in the tree bark as they leave the tree to mate. However, the holes produced by wood-boring insects are generally single and appear randomly across the trunks surface. Sapsuckers drill straight lines of holes into the tree trunk as they feed. In addition to beetle damage, other insects that cause problems on pines include the pine needle scale, aphids, the Nantucket tip moth, and pine sawflies. Many pest problems occur when pine trees are under environmental stress. Trees that suffer from water stress or nutrient deficiencies are more susceptible to pathogens and insect pests. Proper irrigation, fertilization and pH management can help reduce tree susceptibility to pest problems. OSU Extension Fact Sheet EPP-7618 contains more information on common disease problems in pines and other conifers ([http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2313/EPP-7618web%20color.pdf](http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2313/EPP-7618web%20color.pdf)). For more information on insect pests of pines, look at Fact Sheet EPP-7164 ([http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1304/EPP-7164web.pdf](http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1304/EPP-7164web.pdf)).

**Plant Disease and Insect Diagnostic Laboratory (PDIDL)** – In this segment we are joined by Jen Olson, Plant Disease Diagnostician for OSU’s Plant Disease and Insect Diagnostics Lab, commonly referred to as PDIDL. The PDIDL is a service of the Oklahoma Cooperative Extension Service. The primary goal of the PDIDL is to provide residents in the State of Oklahoma with both accurate diagnoses of plant diseases and insect pests and recommendations for their control. The PDIDL operates throughout the year to provide plant disease and insect identification services to extension educators, individuals, consultants, and commercial producers. The PDIDL strives to provide both accurate and timely diagnosis of the samples received. All samples received in the lab are examined for plant disease based on symptoms and the presence or absence of pathogens (microorganisms that cause disease). Diagnostic replies are sent by mail and include a diagnosis, recommendations for control, and supplemental information when available. The following outlines the proper steps to follow in collect plant and soil samples.

**Collecting plant samples:**
- Collect several plant specimens showing various stages of disease development. Select plants that are still alive.
- Collect the entire plant whenever possible. Plants should be dug (not pulled) to keep the roots intact.
- For tree samples, the branches sent in should be at least 8 inches long.

**Plant sample packaging:**
- Wrap the roots of the plant in a plastic bag so that they do not dry out. If the plant is already potted then it can be left in the pot for shipping.
- Wrap the entire sample in plant bags to keep it from drying out (exceptions: wrap fleshy fruits beginning to decay and mushrooms in newspaper).
Place the plant in a sturdy box or mailing tube. Do not add water or wet paper towels.
Send a detailed history explaining the disease symptoms, when disease began, name, address, and phone number.

Collecting soil samples:
- Take several soil samples in an area showing possible nematode damage. Collect the soil at a depth where the root concentration is the greatest (1-12 inches). Mix the samples from the area.
- Remove a single 1 pint sample for nematode analysis.

Soil sample packaging:
- Place soil in a non-vented plastic bag. Label the bag with collection date, location, and crop.

Soil and plant samples should first be taken to your county Cooperative Extension Office for identification. Extension educators at your local office are trained to assist in identifying plant problems. In some cases, particularly with less common pests, the county educators may need assistance in identifying the cause of the problem. In this case, they will direct you toward the PDIDL.

Submitting a sample to PDIDL:
- Before submitting a sample, please complete a Plant Disease or Insect Diagnostic Request Form and submit it with the sample.
- Mail first class in a sturdy box or take it to your county Cooperative Extension Office to have it shipped.
- Submit sample and form to:
  Plant Disease and Insect Diagnostic Laboratory
  Entomology and Plant Pathology
  Oklahoma State University
  127 NRC
  Stillwater OK 74078-3033

Sincerely,

Kim Rebek
Oklahoma Gardening Host
OBGA Affiliate Garden Showcase: Oklahoma City Zoological Park and Botanical Garden

In this segment we visit another OBGA affiliate garden and talk with Pearl Pearson, Horticulture Curator at the Oklahoma City Zoo.

During our visit we learn about the importance of horticulture in the zoo setting and how plants are used to resemble natural habitats, create rooms, direct views and establish a park-like setting in which to enjoy the animals. One area of the zoo uses a technique called landscape emersion to make the viewer feel as though they are inside the exhibit. The zoo also features a number of native plants, which tend to have fewer pest problems and are easier to maintain. The gardens represent a variety of habitats including woodland and prairie habitats found in Oklahoma. As a botanical garden, the zoo also features a number of tropical plants as well as unique plant collections. We take a look at a few of these collections including the dwarf conifers garden outside the education building and the butterfly garden.

Plants featured in this segment include:
Deodar Cedar, Cedrus deodara ‘Prostrata’
Bald Cypress, Taxodium distichum ‘Secrest’
Ponderosa Pine, Pinus ponderosa ‘Little Joe’
Mugo Pine, Pinus mugo ‘Big Tuna’
Austrian Pine, Pinus nigra ‘Hornibrookiana’
Little Bluestem, Schizachyrium scoparium
Pinyon Pine, Pinus edulis
Echinacea cultivars, Echinacea hybrids:
Tomato Soup
Mac-n-cheese
Harvest Moon
Sunrise
After Midnight
Tiki Torch

Constructing a Blackberry Trellis – We plan to establish a row of blackberries and a row of raspberries in our small fruits garden next spring. This season, we are preparing the site. Blackberries will perform best in full sun. Raspberries are not heat tolerant and do not perform as well as blackberries in Oklahoma. If you choose to grow raspberries, select a site with at least 50% shade. A sloped planting site is ideal for cold air drainage in spring. Avoid low-lying areas where cold air settles. You may also consider a site that will provide protection from drying summer winds.

In selecting a planting site, we also want to avoid areas where strawberries, other brambles or solanaceous crops such as peppers, tomatoes, potatoes and eggplants have been grown. These plants all harbor verticillium wilt which can be a problem on brambles. The pathogen that causes the wilt can remain active in the soil for many years.

Brambles tolerate a wide range of soil conditions. Of course, a well-drained soil high in organic matter will provide the best results. It is a good idea to cultivate the soil deeply and incorporate manure or compost. This will also help build the nitrogen content of the soil. Beds can be raised
to enhance drainage. Beds should be 6 to 10 inches high and 2 to 3 feet wide. The plants will need a 2½ to 3 foot unrestricted rooting area.

Begin preparing the site a year in advance. It is much easier to manage weeds before we plant our berries. It is also important to conduct a soil test. Soil pH should fall between 6.0 and 7.0. Use lime or sulfur to adjust pH according to soil tests. We are also working ahead to prepare our trellises. Semi-erect and trailing blackberries and most raspberries require trellising. Blackberries do not necessarily require a trellis, but growing them on a trellis will improve air movement, which can help reduce disease problems, and also increase light penetration. Trellising also prevents canes from tipping over and breaking in strong winds, which is perhaps the most important reason for trellising any bramble in Oklahoma.

There are several different styles of trellis that can be used for brambles. We plan to plant erect as well as semi-trailing blackberries and will use a T-bar trellis to support both types of berry. The T-bar is fairly simple to erect. The materials we need for this include 8 foot lengths of 4’ by 4’ timber, bolts and 12 gauge wire. We will also need to secure the wire to the posts and that can be done simply by stapling it on, or I will demonstrate how to use a wire vice for this job.

Start by cutting a 2-foot section off each of the 4’ by 4’s and set those pieces aside. Set the 6 foot lengths of timber in the ground so that they extend between 3 and 4 feet above the ground, with 2 to 3 feet set in the ground for support. Make sure the posts are set firmly in the ground as they will support all the weight of our berries. Adjust the number of posts according to the length of your bed. We are using three posts for a bed length of 25 feet. Posts should be no more than 20 feet apart within each row, but closer spacing is better.

Next we will secure the cross bar to the top of the post using a bolt. The T-bar is generally placed 3-4 feet above the ground level. We need to secure it tightly. Wires are then run down each end of the T-bar. Use a durable wire or heavy monofilament line. Ours is 12-gauge wire. The wires should be secured tightly, but allow a little bit of give. Wires stretch over time and will need to be tightened each spring. The wires can be stapled onto posts, but this may make it difficult to tighten in the spring. Another option is to use a wire vice on one end to allow for easy tightening.

As you prepare planting beds and trellises for brambles, keep in mind the space requirements for these plants. Blackberries need 3 to 4 feet between plants and rows should be separated by 6 to 8 feet. This will allow plenty of room to develop a healthy root system. We will be back to plant our berries in early March.

Cooking with Barbara – Barbara Brown, Extension Food Specialist, shows us how to store garlic.

Storing Garlic at Home

Caution: Research performed by the National Center for Home Food Preservation confirmed that mixtures of garlic in oil stored at room temperature are at risk for the development of botulism.

Garlic-in-oil should be made fresh and stored in the refrigerator at 40°F or lower for no more than 7 days.

Regardless of its flavor potency, garlic is a low-acid vegetable. The pH of a clove of
garlic typically ranges from 5.3 to 6.3. As with all low-acid vegetables, garlic will support
the growth and subsequent toxin production of the bacterium Clostridium botulinum
when given the right conditions. The conditions include improper home canning and
improper preparation and storage of fresh herb and garlic-in-oil mixtures. Moisture,
room temperature, lack of oxygen, and low-acid conditions all favor the growth of
Clostridium botulinum. When growing, this bacterium produces and extremely potent
toxin that causes the illness botulism. If untreated, death can result within a few days of
consuming the toxic food. It is important to follow science-based directions to make sure
your preserved garlic is safe.

**Room Temperature Storage**
Commercially, garlic is stored near 32°F. Most home refrigerators are too warm for long-term
storage of garlic. Instead, store it in a cool, dry, well-ventilated place in well-ventilated
containers such as mesh bags. Storage life is 3 to 5 months in a cool (60°F), dry, dark location.

**Freezing Garlic**
Garlic can be frozen in a number of ways.
4. Chop garlic, seal tightly in plastic freezer bag, freeze.
5. Freeze garlic unpeeled in glass jars or plastic freezer boxes. Remove cloves as needed.
6. Peel cloves and puree with oil in a blender or food processor using 2 parts oil to 1 part
garlic. Puree will stay soft enough in freezer to remove small amounts to use in sautéing.
   Freeze this mixture immediately—do not store at room temperature. The combination of low-acid garlic and room-temperature storage can support the growth of Clostridium botulinum.

**Canning Garlic**
Canning of garlic is not recommended. Because it is a low-acid food it would require pressure
canning to be properly processed. Garlic processed this way would lose most of its flavor. No
processing times have been determined to safely can garlic.

**Storing Garlic in Wine or Vinegar**
Peeled cloves may be submerged in wine or vinegar and stored in the refrigerator for about 4
months. Discard both the cloves and the liquid if there are signs of mold or yeast growth on the
surface of the wine or vinegar. The garlic-flavored liquid and garlic cloves may be used as
flavorings for food. Do not store the mixture at room temperature because it will rapidly develop
mold growth.

Sources: University of California, Division of Agriculture and Natural Resources, Pub. 7231, 11/97 at http://ucanr.org/freepubs/docs/7231.pdf
and the National Center for Home Food Preservation, http://www.uga.edu/nchfp/how/freeze.html
Barbara Brown, Food Specialist, Oklahoma Cooperative Extension Service

Sincerely,
Kim Rebek, Oklahoma Gardening Host
Establishing a New Vegetable Garden – This season we will feature fruit and vegetable production in the home garden. We will also manage our garden organically to help remove some of the mystery that surrounds that word “organic.”

Site Selection
The following is a list of considerations when selecting a site for the vegetable garden:
- **Sun exposure:** select a site that receives at least 6 hours of direct sunlight each day. Southern exposures are ideal for greatest sun incidence.
- **Soil:** Well-drained soils such as sandy loam provide ideal conditions for growing vegetables. Soil pH near 6.6 is optimal. Avoid steep slopes where erosion will be a problem.
- **Air flow:** avoid low-lying areas as these tend to collect cold air which slows germination and plant development in spring.
- **Avoid placing a vegetable garden near walnut trees.** Walnuts exude a substance called juglone from their roots which is allelopathic, meaning it can kill other plants. Tomatoes and other solaceous plants are highly sensitive to juglone.
- Make sure the site is situated near a water supply.

Removing Vegetation
It is important to start with a clean slate when preparing a new garden bed. And this means removing existing vegetation and controlling weeds. Usually, this is a chore for the summer prior to planting. There are several methods available to kill off vegetation. The most common method is to apply an herbicide, but there are other non-chemical methods such as solarization and smothering.

Solarization is a simple technique that captures radiant heat energy from the sun uses that heat to kill seedlings and weed seeds, as well as some soil-born disease organisms. Sheets of plastic are used to trap the solar heat. Solarization is most commonly used to kill weed seeds in areas where the vegetative layer has been removed.

To smother weeds cover the soil with black plastic, or several layers of newspaper. I have also seen carpet or boards used for smothering.

You can combine solarization with other control methods. For example, you may choose to use an herbicide to make the initial kill, then solarize to control subsequent seedlings and kill seeds in the soil. Solarization can also be combined with the application of soil amendments and fertilizers. In fact, solarization can speed up decomposition of organic matter, releasing soluble nutrients into the soil.

Whatever method is used, it is ideal to control perennial weeds before establishing a new garden. It will be much easier to manage them before you have the area planted with vegetables.

Soil preparation
Once the vegetation is removed, till the soil to loosen it. This is a good time to add manure or other organic material. To preserve soil structure, avoid tilling when the soil is too wet. To
determine if the soil is too moist for tilling, grab a handful of soil and squeeze it slightly. If it sticks together in a ball it is too wet. If it crumbles easily it is ready.

How to Collect Soil for Testing

Soil tests should be included as part of garden preparation. It is easier to amend soils and add nutrients before we plant, rather than after. Soil tests collect information on soil nutrients and pH.

When collecting soil samples, you want to test areas with drastically different soil conditions separately. To get started you will need a tool for collecting small samples. A soil probe is a great tool for sampling, if you have one. You can also use a shovel or even a small bulb planter. You will also need a bucket for sampling. We want to obtain a representative sample for each area being tested. To do this, we need to collect a number of samples from across the entire area being sampled and combine them into a single, representative sample. In a large garden, we may take as many as 15 to 20 cores.

Using the probe collect a number of individual samples and mix them in the bucket. Make sure to use a clean bucket that does not have any cleansers in it. Many cleaners contain chemicals that could alter your soil test results. Take samples to a depth of six inches. I will mix these samples together, then fill the sample bag for analysis.

Sample bags are available at your county extension office, where soil samples may also be submitted. The samples are sent to the OSU Soil, Water, and Forage Analytical Laboratory for testing. Tests cost $10 each, and evaluate soil pH, nitrate nitrogen, phosphorous and potassium contents. You can also request micronutrient tests as well as organic matter content and other specific tests. Test results include fertilizer recommendations specific to the type of vegetation growing on the site. Be sure to mark the proper space on the sample label indicating the type of area sampled, such as turf or garden.

Extension Leaflet L-249 contains detailed information on collecting soil samples.

**Types of Cropping Systems and Establishing Raised Beds** – There are many ways to grow produce. Most common vegetable gardens grow rows of a single plant type. These are the vegetable gardens most of us grew up with and the common system on most commercial farms. However, there are many alternatives to traditional row systems that can help save space and increase the amount of produce you can produce in a small area. We will explore a number of these systems throughout the season including container gardening, vertical gardening and square-foot gardening.

The cropping system that we are using in our vegetable garden is an intensive bed garden, in which we have a series of mounded rows. This system is used to maximize planting area while still maintaining access to the planting beds for maintenance and harvest. Growing in mounded beds allows us to grow four or five traditional vegetable rows together in a smaller space. In essence, the intensive bed garden is a method used to avoid wasting space.

This series of graphics clearly demonstrate the advantage, in terms of space saving, gained by using the bed system over traditional rows. First we look at a traditional row cropping system, with the shaded areas representing the planted space. Rows are spaced according to conventional plant spacing recommendations. The second illustration shows a growing bed garden, again, the shaded areas show the space devoted to growing food. In the first illustration, only 32% of the area is actually devoted to producing crops, while in the garden bed system,
63% of the area is planted. This is a significant difference – we nearly double the amount of space used to grow vegetables.

Our intensive garden will include a series of five foot beds with permanent aisles between the beds. The idea is that the planting bed is always a planting bed, and the aisle is always an aisle. We only walk in the aisles, and never in the planting bed. This keeps the soil in the planting bed from becoming compacted and in theory eliminates the need for tilling once beds are established. When working in our beds, we never step into the bed, but rather work from the aisles between.

The width of the bed can be narrowed to three or four feet if you find it difficult to reach the interior of the bed. Also, the length can be adjusted according to available space. Our beds are 25 feet long. This system can also be translated to raised beds if you have difficulty working on the ground. When establishing the width and length of your bed, it may be easiest to develop beds that have a total area of 100 square feet, such as 4 foot by 25 feet, or 5 feet by 20 feet. The reason for this is that most garden recommendations, such as fertilizer rates, are given in amounts for 100 square feet. One final consideration is to develop all of your garden beds to the same dimensions, as it will be easier to plan crop rotations and to share equipment, such as row covers, between uniformly sized beds.

As you can see, I am simply pulling soil up from what will become the aisles into the planting beds to create mounded, raised beds. One advantage of raising the planting bed above the surrounding soil level is improving the soil drainage. My goal is to raise the planting bed six to eight inches above the aisles. I want the aisles to be relatively flat for ease of walking and kneeling. The planting bed is mounded, or slightly rounded on top, rather than flat. This increases the surface area available to plant. A flat top system is sometimes used if the soil is very poorly drained. If this is a concern, you can create a ridge at the top of the bed, or a trench at the bottom of the bed to catch water. After several years of improving the soil through additions of organic matter, this drainage problem should correct itself.

**Barb Cooks** – Barbara Brown, Extension Food Specialist, gives information on making sure your home canning equipment is ready for canning season.

Sincerely,
Kim Rebek
*Oklahoma Gardening Host*
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