

The Berry Basket

Newsletter for Missouri Specialty Crop Producers

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It's Your Council (Past-Present-Future)

By Ben Fuqua
Professor, Soil Science
Missouri State University

In 1984 a group of Missouri blueberry growers banded together to organize an association of blueberry growers in Missouri. Linda and Larry Jones, Jan and Roger Hackard, Art and Juanita Steinbaugh, Russ and Dianne Erdman, and Earnie and Martha Bohner were instrumental in formatting and writing the charter, constitution, and by-laws to form the "Blueberry Council of Missouri", a non-profit organization operated by and for Missouri growers. The Blueberry Council's primary focus was to promote Missouri grown blueberries and blueberry growers throughout the state.

In the early years, members of the Council faced monumental tasks. First, they had to convince potential consumers that blueberries

could actually be grown in Missouri (most Missourians had never seen a blueberry plant). Second, Council members had to literally show consumers the multiple uses of fresh and frozen blueberries (many Missourians had never tasted a fresh blueberry and were only familiar with blueberries found in pancake mixes!).

Blueberry growers across the state held educational meetings and demonstrations at county fairs, garden clubs, local harvest festivals, and on their own farms. They took blueberry treats to area newspaper, radio, and TV reporters in order to acquaint consumers with this new, delicious, blue-colored berry.

The Council worked closely with the Missouri Department of Agriculture, particularly the "AgriMissouri" program in developing maps locating blueberry farms, recipes, and other fact sheets on blueberries. Several gallons of blueberry sauce were served at the Department of Agriculture's "Taste of Missouri" dinners to introduce Missourians to this tasty, new berry. Council members supported state wide

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advertising, petitioned the governor to declare June as “Blueberry month in Missouri”, and served as a center for purchasing growers’ supplies in bulk. It was a very busy time, but was very successful in promoting blueberries as a delicious, “healthy” fruit.

Linda Jones was elected President and along with a supportive group of officers directed the activities of the Blueberry Council during these early years. Jan Wooten, Mary Hinze, Tom Willis, Bob Hershey, Jay Chism, Earnie Bohner, and Dr. Michael Wooten have all served as president. Dr. Howard Thompson continues the Council’s work in this office. Many other Council members have stepped up to fulfill leadership roles by serving as officers, zone directors, and chairs of special committees.

Currently there are 16 members of the Blueberry Council. This past year, the Council helped sponsor the breaks during the Missouri Small Fruit and Vegetable Conference, promoted Missouri blueberries at state and local meetings, coordinated the ordering of plastic bags (bucket liners) for growers, and established a web site agebb.missouri.edu/hort/blueberry/view.htm listing Council members and farm locations. Dr. Howard Thompson, Phil Bailey, and Carol Busacker currently serve as Council Officers. The Council will meet on Tuesday afternoon, February 17, immediately following the blueberry session of the Small Fruit and Vegetable Council. All blueberry growers are urged to attend the meeting and join your Missouri Blueberry Council. The past activities of the Council have been very successful in promoting “Missouri-grown blueberries”.

The present Council is active, but needs additional members and support. Even though many of the long-time blueberry growers are retiring and selling or abandoning their plantings, new plantings are being established and the acreage of blueberry production in Missouri remains at 150-175 acres. Consumer demand for fresh, “Missouri grown” blueberries far exceeds the supply, thus the future looks bright. The future of the Council is up to you. ***Remember, this is a growers’ association!***

Winter Gardening Tips

*By Jennifer Schutter
Regional Horticulture Specialist
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The holidays are over and it’s now time to start thinking about gardening again. Although you may have received a few seed catalogs along with your holiday cards, most companies target January as the month for their catalogs to arrive in your mailbox. For some people, these catalogs are junk mail, but for gardeners, seed catalogs provide many hours of reading, dreaming, and deciding what seeds and plants to order for the upcoming gardening season.

Most companies have sufficient quantities of seed to fill orders, but it’s wise to get your order in early to ensure that you will get the seeds and plants you want. Many companies offer “early bird discounts” or free packets of seeds to encourage people to not wait until the last minute to order. If you plan to grow your own plants, remember that some, like petunias and snapdragons should be started in late February, another incentive to order early.

Now is a good time to take inventory of your propagation supplies for starting seeds. Check quantities of potting soil, containers, labels, and other supplies, as well as seeds you may have stored from previous years. Sterilize any used containers you plan to use with a 10 percent bleach solution (one part bleach to ten parts water). If you have seeds that are more than a couple of years old, sow a few to check their germination rate. To do this, place 10 seeds between two sheets of moist paper towels and tuck into a loosely tied plastic bag. Place in a warm area, and check on them every few days. If germination is less than 80 percent, consider purchasing new seed of that crop. If you start seeds under grow lights or fluorescent shop lights indoors, check the tubes for signs of age. Tubes that have been used for several seasons have probably lost much of their intensity even though they look fine. Dark rings on the ends of the tubes are a sign they need to be replaced.

Although a sunny windowsill is an ideal spot for sun-loving houseplants, be sure that the plants are not touching the glass or they could be damaged by the cold. Heating vents, often located underneath windows, can also dry plants out quickly and damage them. You may want to move plants to a different location, perhaps under grow lights, until spring. If you've noticed tiny, black flying insects that look like fruit flies around your houseplants, they are probably fungus gnats. Though annoying when they fly about, they are harmless. Their tiny, worm-like larvae feed on organic matter in moist soil, which can include plant roots. To control them, allow the soil to dry out between waterings, use sticky traps, or drench soil with a biological control.

Potatoes, onions, carrots, turnips, and other root crops that you have stored in your root cellar or basement should be checked regularly for signs of decay. Vegetables that show any rotting should be removed immediately so they don't spread the disease to other vegetables and spoil the entire bushel or box.

If you plan to order bare root fruit trees or plants, now is the time to order them. Bare-root trees are shipped in late winter or early spring before they start to grow. Trees will be shipped for planting time in your area, and should be planted upon arrival to prevent drying out. Follow the planting instructions on the package or label. Most bare root plants need to be soaked in water a few hours before planting.

Before the main pruning season starts, take apart hand pruners and shears, sharpen the blades, oil the levers, and remove any rust. Pruning trees will go much faster and be easier on your hands when you use sharp, well-maintained equipment. If the handles of your small tools are faded or made of wood, paint them so you can easily find them in the garden.

Pay extra attention to the needs of birds this winter. If you are feeding them, check feeders every few days and fill them as needed. Black oil sunflower seeds and white millet will attract cardinals, goldfinches, black-capped chickadees, purple finches and nuthatches to your yard. Ear

corn, shelled, or cracked is a favorite of many other species including blue jays and mourning doves. Some birds prefer suet cakes, especially the woodpeckers.

Clean the feeders periodically as moldy seed can make birds sick. Clean out old seed and debris then scrub with a mixture of water and chlorine bleach (one ounce of bleach per gallon of water). Rinse well and allow to dry before adding new seed. In between cleanings, when refilling hanging feeders, shake to dislodge compacted seed. Dump out wet clumps of old seed. If possible, provide a source of water for the birds. A heated birdbath is ideal. Purchase one with an automatic shut-off valve or heat cycling on-off switch, which will prevent damage to the birdbath if it goes dry. Use a grounded, three pronged outlet to prevent the possibility of electrocution.

By following these tips you can enjoy the winter season and prepare for the warmer days of spring.

What's in Your Compost?

By James Quinn

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Manjula Nathan

Director MU Soil Testing & Plant Diagnostic Service Laboratories, and

Chris Starbuck

State Woody Plant Specialist

Many municipalities in Missouri and around the country practice some type of yard waste composting. This was a response to the concern of how much yard waste was ending up in landfills. Disposal of yard waste in landfills increased, in part, as a reaction to the 1970 Clean Air Act. This act restricted burning in some urban areas. While most residents are primarily concerned with their city's compost, we wondered how compost would vary from different sites around the state.

The equipment and techniques used in composting vary significantly by the

municipalities. Higher quality compost is more easily attained when large windrows are formed and regularly turned, and this is significantly aided by a large piece of equipment aptly referred to as a 'windrow turner'.

Otherwise a loader is used. The windrow heats up as microbes begin feeding on the leaves, trimmings, ground wood, and grass clippings. This is an aerobic process, aerobic meaning in the presence of oxygen. So, after a period of time it needs to be turned, fluffed or vented and the cycle repeats. Turning may be as frequent as weekly particularly if high nitrogen material, like grass clippings, are added. Less turning is required when the weather is colder or when the material contains less nitrogen. After about 6 months, this material is ready to 'cure' (a stage in which it can be put in larger piles for aging/maturing- 6 months to a year) and does not need to be turned. The material now is generally referred to as 'compost'. Screening the compost is considered a huge quality improvement, as the material becomes uniform and finer, and the many irregularities that gardeners find offensive are removed (e.g. pieces of wood, rocks, bits of trash).

For our investigation, samples of compost were sought and obtained from municipalities that windrow their compost and screen the

Some municipalities grind up yard waste and then make large piles for residents to pick up the material for free as 'mulch'. While these piles sit, they often heat up. This is not compost, and was not of interest for this article; unfortunately many residents erroneously refer to this decomposing mulch as compost.

final product. However, to provide some contrast, samples from three commercial compost operations were obtained, as well as from two municipalities that do not screen the final product. Various sources of commercially produced compost are available around the state, sometimes from retailers, and a number

of municipalities have unscreened compost, sometimes making it available for free. The samples were obtained winter 2007/08 and analyzed by the MU Soil and Plant Testing Laboratory in Columbia. Test results are shown in Table 1 for the major elements and other key parameters.

As partially decomposed organic matter, compost can have a range of characteristics. Compost can vary because of the raw materials used, degree of decomposition, moisture content, nutrient content, salt content, acidity/alkalinity and contaminants (organic and non-organic materials or heavy metals). Some quality measures such as carbon/nitrogen ratio, smell and particle size indicate that some of the above mentioned characteristics or the effectiveness of the composting process. Large particle sizes are indicative of incomplete decomposition. A foul odor can occur if the compost is too wet or too tight. Finished compost is dark brown, and crumbly, and has an earthy smell. The original materials should not be recognizable. Inert materials such as glass or plastic ideally should be no greater than 1% of the compost volume. Table 2 lists characteristics measured by the MU Soil & Plant Testing Laboratory and briefly describes their relevance to compost quality.

When compost materials break down they release organic acids, thus having a gradual acidifying effect on the soil, varying from a month or two to over a year. This breakdown will be faster if the compost is tilled into the soil and the conditions are warm and wet. However, if the pH of the compost is 7.0 or greater, the expected pH reduction will take longer. As shown in table 1, all but one of the samples in our test had pH values above 7.0. The higher salt level for two of the commercial samples (Early Bird and Microleverage) is typical of compost that has included animal manure as a source ingredient. This can substantially increase the N-P-K of the product as well, which is very apparent with the Early Bird sample derived from poultry litter and aged wood waste. Nitrogen is the nutrient most

Table 1. Composition of the Compost Samples Collected from Various Missouri Sources

Tests	Units	Source of Compost Sample											
		Commercial- screened					Municipal screened					Municipal <i>unscreened</i>	
		Early Bird	Micro-lev	Hansen's	Columbia	Joplin	KC***	Springfield	Spfld Java	Jeff City	St Louis***		
pH		7.32	6.72	7.26	7.14	7.81	7.48	7.62	7.51	7.62	7.09		
E.C. - Sat Paste	mmho/cm	19.5	10.4	4.60	5.83	1.67	4.14	4.23	1.68	1.77	0.71		
Total N	%	3.23	0.90	1.70	0.70	1.31	1.06	2.13	2.28	0.81	0.41		
Total P	%	1.98	0.54	0.28	0.20	0.18	0.16	0.29	0.20	0.12	0.07		
Total K	%	2.23	0.89	0.86	0.21	0.41	0.13	1.09	0.69	0.47	0.38		
Total Ca	%	4.65	4.59	5.16	13.0	7.50	3.82	5.48	5.01	4.05	1.19		
Total Mg	%	0.76	0.50	0.65	1.25	0.30	0.13	0.50	0.56	2.13	0.22		
O M****	%	82.5	25.6	50.4	48.4	54.0	15.67	32.5	46.6	17.7	83.8		
C/N Ratio		14.8	16.5	17.2	40.3	31.4	8.6	8.9	11.9	12.7	117.7		
Moisture	%	13.1	38.3	49.4	23.1	61.2	4.6	36.3**	36.3**	46.2	54.4		
Wet Weight*		115	162	198	130	258	105	157**	157**	186	219		

* Assuming 100 units dry weight ** Moisture test was not conducted; figures are an average of all other samples *** For information on the KC Metro compost sample contact Lala Kumar at (816)252-5051 KumarL@missouri.edu and for Metro St. Louis Scott Killpack at (636)970-3000 KillpackS@missouri.edu **** Organic matter is 58% carbon

Table 2. Compost analysis interpretation*

Characteristic	Reported Units	Desired Range	Comments
E. C. (electrical conductivity) Saturated Paste	mmhos/cm	< 4.0	Electrical conductivity is a measure of soluble salt content. Higher than desired salt levels can be harmful to germinating seeds and plants when compost is a component of the growing medium. The desired ranges may not apply when compost is used as an amendment because of the diluting effect of mixing the compost with soil.
Nutrient concentration	% of N-P-K; Ca, Mg,	various	Low levels of nutrients may indicate incomplete decomposition or low amount of nutrients in the original material(s). Composting concentrates nutrients and provides for their slow-release, which can result in more efficient plant uptake and less fertilizer leaching. In the latter stages of composting, nitrate and ammonium levels increase. Nitrate can leach from the compost.
pH		6.0 – 7.5	pH indicates acidity/alkalinity. Compost may help buffer soil toward neutral, pH = 7.0. It depends on the kind of material composted and the final pH of the compost.
Moisture content	percent	40 - 50	Very wet compost can cause odor problems, while dry compost can be dusty and irritating to work with.
Organic matter content	percent	50 – 70	Organic matter in compost improves soil structure and water holding capacity.
Carbon/Nitrogen (C:N) ratio		10 - 30	C:N ratio is used as a measure of stability. A ratio of less than 25 likely indicates stable compost (the composting process is finished) from which nitrogen will be more available as mineral nitrogen (nitrate and ammonium).

*Adapted from Organic Materials Management. 1995. Michael Leanon. California Integrated Waste Management Board.

often limiting to plants, thus of key interest by gardeners in a natural fertilizer. It varied substantially between sources. For the municipal sources, Springfield was the highest. Springfield produces two composts, one that has coffee grounds as a significant input (Java blend), and one without. In general, potassium in all the samples was higher than the phosphorus content with the exception of the KC metro compost. Calcium content was noteworthy for Columbia's compost as it was more than double than most. Columbia mixes waste sheetrock with their compost. The outside layers of sheetrock are paper, and the inside is gypsum; gypsum (CaSO_4) is calcium rich and recommended as a soil amendment to increase calcium when an increase in pH of the soil is not desired.

The carbon to nitrogen ratio (C/N) is a key parameter, with 25 or less preferred. All 3 commercial sources and 4 of the 7 municipal sources were less than 25, thus indicating they were stable.

Generally municipal compost is very economical, although one may have to pick it up from the compost site. Calling ahead for hours, pricing and preferred equipment for transport is suggested. Making sure they will have equipment to load your pick-up or trailer can save time and a sore back.

Trying to be exact as to how much compost to apply can be a little tricky due to the variation in nutrient amounts and moisture content. Given its numerous soil improvement benefits, it is good to start using it without getting worried about applying exactly the right amount. The following tips for using compost are provided, assuming the compost is about 1% nitrogen and about 40% moisture. Tips for using compost (assuming the compost is about 1% nitrogen and about 40% moisture) MU Guides can be found at <http://extension.missouri.edu/explore/agguides/hort/>

1. General or maintenance fertilization- substitute one to two gallons of compost for each dry cup of mixed fertilizer (containing N, P, & K). See Table 2 in MU Guide Steps in Fertilizing Garden (G6950)

2. Turf- Compost may be used as lawn topdressing, but it should not be applied more than ¼ inch thick; at this thickness about 1 pound of nitrogen per 1,000 sq ft is provided. Screened compost having finer particles should be used (from MU Guide Making and Using Compost G6956).

3. Vegetables and annual flowers- 1 to 2 pounds compost per square foot for soil development or ½ to 1 pound per square foot for soil fertility maintenance (from MU Guide Organic Gardening Techniques G6220).

4. Vegetables and annual flowers-For converting sidedress recommendations, use 30-35 pounds of compost (about 5 gallons) for every one pound of ammonium nitrate recommended. One pound of ammonium nitrate is recommended for 100 feet of row of most flowers and vegetables. See MU Guide Table 2 in Steps in Fertilizing Garden (G6950) soil for specifics.

5. Trees and woody shrubs- For surface application, follow the turf recommendation twice a year (April & October). Be sure to calculate the square foot of the root zone and adjust accordingly. The root zone extends 4 to 6 feet beyond the branch spread of the tree and for a medium shade tree, 20 x 20 ft would be common. See MU Guide Fertilizing Shade Trees (G6865) for more detail.

6. Trees and woody shrubs- Compost may be used as mulch for trees and shrubs. Mulch should not be applied more than 2 inches thick (from MU Guide Making and Using Compost G6956).

7. Houseplants- Apply a ¼ inch deep layer to the soil surface monthly. Withhold in winter months. Not intended as a potting soil substitute. (see MU Guide Caring for Houseplant G6510).

8. Commercially produced compost generally has instructions on how much to apply for different applications (e.g. turf, vegetable, or houseplants). These instructions should be followed. For retail outlets or product use information, contact Early Bird Compost at <http://www.earlybirdcompost.com/> or 660-273-0088

Microleverage at <http://www.microleverage.com/> or 660-619-1020

Hansen's at <http://www.hansenstree.com/> or 636-379-1866.

New Decision Tool Available to Make Choosing a Cover Crop Fast

*By Thomas Bjorkman
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Cornell University's New York State
Agricultural Experiment Station*

(New York Berry News Editor's note: While this decision tool was developed with vegetable crops in mind, we asked Dr. Bjorkman if it would be applicable to berry crops as well.

"I think it would work well for berry growers. Their rotations are a bit different, but the tool would allow a strawberry grower, for instance, to choose a verticillium suppressor if that's their main concern, or a weed suppressor that goes in after the strawberries get pulled out. I'm less familiar with brambles and bushes but I don't see why it wouldn't work well.")

New York Vegetable growers have a new tool available to make it easy to select a cover crop. It's challenging to keep track of which cover crops are good for various situations. Even growers who want to try a new cover crop find they don't have time to research them when the opportunity to use one arises. The new decision tool will speed that process. If a grower has an idea of why they need a cover crop and a particular window in the rotation, they should be able to enter those goals and come away with growing instructions in less than five minutes.

I developed this tool with the help of many colleagues with cover crop expertise using funding from the New York Farm Viability Institute. The tool is designed to complement the new Cornell Soil Health Test, so that growers

whose prescription is to use a cover crop can fill that prescription easily.

The tool uses the information the growers are most likely to have in hand. Usually, they have a particular management objective, whether from the soil health test or their own observations. There is usually also a time during the season when there is an opportunity to put a cover crop between cash crops.

The first step of using the tool is to enter one or more of the three criteria: management goal, planting time, and duration. Clicking "Search" quickly brings up the main candidates and some key information to help choose. These searches are fast enough that it's easy to tweak the criteria and search again to see what comes up.

The second step is to look at the candidate cover crops to see whether they are compatible with the existing rotation, whether the price is appropriate, whether the necessary equipment is on the farm, and similar deciding factors. Simply clicking on the name of the cover crop brings up the production instructions.

The third step is to review the production instructions. Most run about a page and include where to buy seed, how to plant, when to terminate the crop and how. It also has some of the tricks that experienced hands have passed on. A click on the cover crop name on this page brings up a PDF file that can be printed out. We have made the instructions as complete as we can, so that each step can be carried out reliably by any reasonably experienced farmer. To keep the instruction to the point, they contain neither general information nor research results. There are other publications that provide such information, in particular the new Third Edition of "Managing Cover Crops Profitably."

As an example, a grower might be interested in reducing surface hardness in a field to be harvested in mid-August. The search turns up two hits, Forage Turnip and Hairy Vetch. Since this field had cabbage in it the previous year, the turnips are rejected because that's too soon to plant another crucifer. Hairy Vetch will not only help with surface hardness, but will also fix nitrogen and suppress spring weeds. Going

to the instructions, the page describes 1) the key factors in land preparation (break compaction, have adequate P and K); 2) the seeding rates of hairy vetch and an oats or rye nurse crop to reduce root rot pressure; 3) the late August through September planting window; and 4) the termination by mowing or incorporating in late May when the vetch flowers.

Not every combination of management goal and time results in a hit. The cover crops included in the tool are only those that are readily available and relatively inexpensive. Nevertheless, there are cover crops available for any time of the year. There are those that are best raised for a year or so, to those that are done in a bit over a month. A substantial number of management goals are included. Some, such as increasing organic matter, can be met by many cover crops, others, like suppressing verticillium, are met only by one cover crop. The tool will be expanded as current research projects yield more results.

The online decision tool can be accessed at <http://miniurl.org/nycctool>. The shortcut to the relevant page on the Cornell vegetable cover crop site is (www.nysaes.comell.edu/hort/facultyfbjorkman/covercrops/)

Berry Basket Editor's Note: We thank Dr. Thomas Björkman for his permission to reprint this article from the New York Berry News Volume 7 Number 5, May 2008. Dr. Björkman cautions that "The value of the decision tool is that it is tailored to New York conditions. That allows me to be specific about seed suppliers and planting dates--which are often pretty narrow." Missouri growers must note that the specific recommendations are not appropriate for our local growing conditions and to use the information only as a general reference.

Don't Ignore the Market

By Marilyn Odneal

Horticulture Advisor

Missouri State University

The Arkansas Department of Agriculture and the University of Arkansas Cooperative Extension Service sponsored a Specialty Cut Flower Workshop on November 18, 2008 in Little Rock. The theme was "Don't Ignore the Market" and I was fortunate to be able to attend with our two visiting scientists from China, Mrs. Wang and Ya Li Wang.

The entire program was excellent, but I will focus on the interesting panel of specialty cut flower market representatives posed with the question "What does the market want/need?" Tiffany Dotson of Whole Foods represented the grocery store market, Chris Norwood of Tipton Hurst represented the retail floral market and Peter Brave of Brave New Restaurant represented the restaurant market.

Brave New Restaurant is dedicated to using the freshest and highest quality ingredients for their dishes. Diners can view the open kitchen to see the food prepared or eat out on the deck that overlooks the Arkansas River in Little Rock. Peter Brave buys fresh local produce in season. When dealing with a flower producer, Peter is primarily concerned with cost, since flowers are an "extra" in the restaurant business. He is also interested in durability, colors, the reliability and consistency of the product (he would like to see the flowers available all season), and is not interested in fragrance for table top bouquets as that may interfere with food and wine aromas. He advised flower producers who are interested in the restaurant market to find a key person at the business in order to get their foot in the door – so research the restaurant first. Once a meeting is arranged, bring catalogs and samples, be open to custom orders, and for Brave New Restaurant, keep in mind that they are interested in a local aspect or connection. Pam and Frank Arnosky, respected and successful flower producers from Blanco, Texas, also participated



Panel representing various cut flower markets included (from left to right) Tiffany Dotson, Floral Specialist for Whole Foods, Chris Norwood of Tipton Hurst Florist and Peter Brave, Owner of Brave New Restaurant.

in the conference as presenters. Pam mentioned that they maintained two sets of table vases when working with a restaurant. They would pick up the old vases and replace them with new vases with arrangements for the table on a weekly basis. Their children prepared the vases for a per vase wage. The restaurant would also want to order more produce for special events and private party rooms.

Brave New Restaurant, Little Rock
<http://www.bravenewrestaurant.com/main.html>

Tipton Hurst is an upscale retail florist in Little Rock with four stores. Representative Chris Norwood stressed that florists have very busy schedules and growers need to schedule an appointment to see them. He usually pre-books orders (and guarantees to buy the product if it is good quality). He is especially interested in purchasing flowers locally that do not travel well when shipped, like zinnias and dahlias. He is also interested in herbs and grasses. Important characteristics of the product Chris is interested in include durability, long shelf life (or vase life) and uniqueness (higher mark up). He likes “very tall things” for party work and unusual features like ryegrass runners for spring parties and special events. Tipton Hurst has been in business since 1886 and Chris commented

that the “florist business is one of the few that is recession proof”. He stressed, however, the importance of having unique designs in your offerings. “Five huge amaryllis in a pot are beautiful and unique. You can’t find that at a grocery store!” He says it is important to have a niche outside of the “common” flower – to be opulent. “We are interested in OMG (Oh my God!) items that attract attention.”

Tipton Hurst, Little Rock
<http://www.tiptonhurst.com/>

Whole Foods is a grocery chain that specializes in locally produced foods. Floral Specialist, Tiffany Dotson looks for cut flower vendors that can consistently supply a high quality product. Tiffany stressed that freshness is key (and related to freshness - longevity of vase life). The product should be well packed, with the invoice right in the pack (or bucket) to make it easier for the store to keep accounts straight. Along with flowers, Tiffany noted that organic herbs are a big seller and may complement a cut flower operation. Tiffany stressed that growers interested in the grocery store market need to come into the store with information about themselves and their product mix and quantities. “You need to come in and tell us about yourself! We are all busy and we need you to let us know what you are producing.”

Whole Foods, Little Rock
<http://www.wholefoodsmarket.com/stores/littlerock/>

The take home message from the panel is that consistent, high quality, local production was the key to a successful relationship between grower and buyer. Consumers are demanding local products. This is a great time for local growers of quality specialty cut flowers and other products to forge positive and lasting relationships with buyers. Don’t ignore the market!

High Tunnel Workshop

Join us for our high tunnel workshop at the Missouri State - Mountain Grove Research Campus on Thursday, March 12!

Here are some notes on high tunnels from a past issue of the Berry Basket.

“High tunnel vegetable production offers a new wave of opportunities to some vegetable producers. These unheated, plastic-covered structures provide an intermediate level of environmental protection and control compared to open field conditions and heated greenhouses.” *Gaylord Moore, Fall 2003*

Presentations include:

High Tunnel Basics

Blueberries and Brambles in High Tunnels

Dr. Ted Carey— Associate Professor, Olathe Research and Extension Center, Kansas State

My Experience and Product Mix in High Tunnels

Robbins Hail – Bear Creek Farms, Osceola, Mo.

Organic Apple and Raspberry Production in High Tunnels

Dr. Curt Rom – Professor, Dept of Horticulture, University of Arkansas

Grafted Tomatoes in High Tunnels

Dr. Sanjun Gu – Horticulture Specialist, Lincoln University

Peonies in High Tunnels

Dr. Alan Stevens – Director, Olathe Research and Extension Center, Kansas State University

Cost for the workshop is \$20 which includes lunch and handouts. Event website - <http://mtngrv.missouristate.edu/commercial/HighTunnel.htm>

For additional information please contact:

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Thoughts on My New High Tunnel

By Jo Anne Thomas

Paeonia Select

In a nut shell... what have I gotten myself into? When I wrote the SARE grant to grow peonies in a high tunnel all I thought about was.... push the bloom time, get into the market earlier, and keep the orders going throughout the rest of the peony season.

Potential Gain: Profit \$\$\$

Now let's talk about the reality. I'm a practical person. I only want to spend my time or money once... make/do it right the first time. These are some of the stones I stepped on as the high tunnel project developed.

Since the high tunnel is within city limits, I met with Mayor John Neuenschwander of Lowry City to share my project and review codes and rules. He agreed that building a high tunnel in my field was within the law

Cost: Time

The field I am growing peonies in flooded several times last spring even though it had been graded before planting. The message... it wasn't graded properly.

Cost: \$250.00 and time

To eliminate the potential of future flooding, Don Schuster, USDA-NRCS, Coordinator, Osage Valley Resource Conservation suggested a core sample. Mark Abney, Soil Scientist, USDA-NRCS, brought a hydraulic drill welded to the truck bed. He drove out to the areas he sampled. Hartwell soil... about 15- 20" of topsoil, layer of hard pan followed by clay

Gain: Appreciation

Cost: Time

With new soil information a neighbor sighted corners and elevation to insure square and true corners for the high tunnel with the proper grade.



High tunnel at Lowery City.

Cost: Basket full of tomatoes, green peppers, cucumbers and Time
Bring in extra soil, re-grade field -\$425.00

Buy local, support the region, buy good quality so...I selected a high tunnel from Norman of Morgan County Seed Company (573-378-2655). The original price increased \$1,000.00 due to surcharges and increase in metal prices.

Cost: -\$1,000.00

The gas price was the highest of the summer and I needed to borrow a sixteen+ foot trailer to pick-up the high tunnel. Fortunately, friends loaned me the truck and trailer and went with me to load and unload it.

Cost: With much appreciation Dinner, gift and gas - \$300.00 and lots of Time

Dave Turecki a friend and retired electrician agreed to erect the high tunnel at an hourly rate. The directions were vague and Dave had to visit Norman's high tunnel to understand how to assemble it.

Cost: - \$150.00 and one day's time

Dave reinforced the first and last bows to withstand potential snow load, installed water valve inside the high tunnel for drip watering, graveled front door area and the green wood for

the siding and ends of the high tunnel.

Cost: Extra materials to complete high tunnel. - 1,370.00

Two neighbors go berserk about structure and want construction stopped. Re-visited mayor to secure his support and endorsement of high tunnel meeting all codes.

Cost: Trauma and Time

Total expenses for this project exceeded the grant by more than \$5,000.00. The amount is about the cost of another high tunnel. I've learned to go to the experts rather than accepting the opinions of my farmer neighbors no matter how well intended, labor costs can doom a project, it always costs more and takes more time than expected. Finally don't get caught up in the short term pain...it's about the tomorrows. I'm trying to think of ways to creatively pay for these additional costs. Ideas and suggestions include: renting space to other growers to start seeds early, flower baskets hanging from above, and bulbs in crates. You have any suggestions? I have two more years until the peonies within the high tunnel will be mature enough to harvest!

Cost: Creativity and Time

Was it a good investment ????

The answer to this question will be ~priceless!

Jo Anne Thomas is a peony grower and wholesale broker. Her company Paeonia Select has a processing center in Lowry City, Mo. Jo Anne's goal for the high tunnel and peony beds is to demonstrate commercial growing techniques and serve as an educational center for her peony growers and others. If you have questions please call 816-820-8869 or email thomas1@kc.rr.com

Read's Quarterly Question **Got Biologicals?**

By Andy Read

*Regional Horticulture Specialist
University of Missouri Extension*

Q: I've already started going through the seed and garden catalogs for next season. What can you tell me about biological pesticides? I'm seeing lots of these offered and they sound very interesting as an alternative to harmful chemicals. Do biological pesticides work? *Denise Lebuge - Salem*

Biological pesticides are becoming very popular as gardeners become more interested in low toxic alternatives to traditional garden chemicals.

Biological control is the use of living organisms to control pests. Pests such as insects, diseases weeds and even some vertebrates can be controlled using biological organisms.

The actual means of control can take many forms. Predacious or parasitic insects may be used to control certain insect pests. Pathogenic fungi can be used to infect insect pests as well as certain species of weeds. Antagonistic fungi or bacteria can be used to control certain plant pathogens like powdery mildew.

Low impact to non-target organisms is one of the benefits of biological products. For instance, spraying tomatoes with *Bacillus thuringiensis* (Bt) for control of tomato hornworm will not hurt bees that may be pollinating flowers. Bt is only effective against certain types of Lepidopterous (moths) caterpillars that ingest the product. Bt has no effect on humans or any other type of insects.

It is very important to identify and understand the pest you are trying to control and its lifecycle if you are going to use biological pesticides. A thorough understanding of the pest is important because biological pesticides are so specific as to the organisms they target.

Research on biological pest control products is limited. Most studies have taken place on a

small scale and in controlled environments like greenhouses. Data from controlled experiments like these may not be replicable when countless new variables are introduced under outdoor conditions.

Some products have proven themselves to be useful in outdoor conditions. Research the products you are going to use then try them in small amounts. Many of these products are fairly expensive and using them on small areas first may save a lot of money if they don't work for your situation.

Combining biological control measures with the use of synthetic chemicals can reduce the effectiveness of the biological organism. Certain insecticides are very harmful to beneficial insects. In general insecticides that have to be eaten by the pest are the least toxic to beneficial insects.

Insecticides are not the only chemicals that can reduce the presence of beneficial organisms in our gardens. Certain fungicides inhibit egg laying by predacious mites. Some herbicides have been shown to repel certain types of predacious mites.

When using biological control methods it is important to anticipate problems. Have the products you are going to use on hand. Be ready and apply biological pesticides before or at the early stages of a pest outbreak.

This highlights the importance of understanding the pests you are trying to control.

If you are trying to control powdery mildew on grapes look for the conditions that favor the disease. As temperatures warm in the spring and early summer and the air is humid you can expect infection by powdery mildew. *Bacillus subtilis* has been shown to be useful against powdery mildew on a wide range of crops. Its use is as a protectant it does not have therapeutic properties so it must be applied before the infection is widespread.

Least toxic methods of disease and insect control are definitely the way to go in the garden. Biological organisms play a role in all of our gardens if we realize it or not. Manipulating that balance requires gardeners to understand our garden ecosystem as a whole.

Biological pest control products can be very useful and I'm hopeful that their use will continue to increase as more products and research become available.

Feel free to contact me if you have questions about specific biological organisms or their uses.

2009 Guides Now Available!

The following guides have been updated for 2009 and are now available on the web.

Midwest Vegetable Production Guide for Commercial Growers 2009 (ID-56)
<http://www.btny.purdue.edu/Pubs/ID/ID-56/>

Midwest Commercial Small Fruit and Grape Spray Guide 2009
http://www.hort.purdue.edu/hort/ext/sfg/sfg_sprayguide.html

2009 Midwest Tree Fruit Spray Guide
<http://www.extension.iastate.edu/Publications/PM1282.pdf>

Missouri Organic Association Conference

The annual Missouri Organic Association Conference will be held Saturday, February 21, at Lincoln University's Carver Farm in Jefferson City, Mo. This year's conference will have two tracks. One track will focus on information for experienced producers with the second track focusing on information for beginning or prospective producers of organic food.

The goal of the Missouri Organic Association is to bring together Missouri organic growers, gardeners, consumers and all advocates of organic methods in a united effort to spread an understanding of the importance of a healthy food supply system and to promote the growing and eating of organic foods.

The agenda for the conference is still being finalized. At this time we have the following speakers confirmed.

Track for experienced producers: **Organic Dairy Production**, Dr. Scott Pooock, MU State Extension Vet Med Specialist, **Selling Raw Milk**, Rachel Bax, Missouri Milk Board, and **Organic Grain Production**, Joel Gruver, Western Illinois University.

Track for beginning and prospective producers: **Grow Your Farm**, Dean Wilson, MU Extension Ag and Rural Development Specialist, Jefferson County, **Small Farmers' Outreach Program**, Sanjun Gu, Lincoln University, State Horticulture Specialist, **Missouri Dept. of Agriculture Programs** for Prospective and Beginning Farmers, Lane McConnell, Marketing Specialist, Missouri Dept. of Agriculture, **Growing Growers and Kansas City Center for Urban Agriculture** (KCCUA), Katherine Kelly, Executive Director of KCCUA, and **EarthDance Organic Farming Apprenticeship Program**, Molly Rockamann, EarthDance, Ferguson, Mo.

Topics to be presented to all attendees: **Soils**, Bob Kremer, Agricultural Research Service (ARS) and **Marketing Opportunities** - Presentations by buyers of a wide variety of food items from across the state. This will include farm-to-school and farmers' market opportunities.

Other topics of interest will include small fruits, vegetables, and livestock. Also included is a trade show with exhibits from extension, research and agencies, as well as buyers of organic products and producers. An organic lunch will be served. For additional information go to www.missouriorganic.org or call 573-882-1905.

29th Annual Missouri Small Fruit and Vegetable Conference

The Conference brings together small fruit and vegetable growers, researchers, extension workers, and commercial suppliers from across the state and around the country. The keynote presents the concept of Polyculture - raising multiple crops in the same space to mimic the diversity of the natural ecosystem. There is a trade show that includes vendors for a wide range of products and services and the Blueberry Council of Missouri holds its annual meeting. You can sample and screen possible new crops to try on your farm, hear how the latest research can benefit your operation, and exchange ideas and best practices with other growers and horticulture specialists.

Monday February 16, 2009

9:00am The Basics of Small Fruit and Vegetable Production - Dr. Sanjun Gu, Horticulture Specialist, Lincoln University

10:00 Basic IPM Strategies and Ways they can be Utilized for Diseases and Insects - Anastasia Becker, IPM Program Manager, Missouri Dept of Agriculture and Simeon Wright, Plant Diagnostic Clinic, University of Missouri Extension Cent

12:00-1:00pm Lunch on your own

1:00-2:00 Grower Panel Discussion, Marketing Strategies for Small Fruit and Vegetables - Curtis Millsap, Millsap Farm and CSA and George Cline, Cline Berry Farm, Harrison, Arkansas

2:00-5:00 Farm Tour Prairie Picking Patch Larry Smith's farm near Ash Grove

Tuesday February 17, 2009

8:00am Registration - Trade Show all day

9:00am Welcome and **Keynote** - Modular Ecological Design: A Fruit and Vegetable Polyculture System
Dr. Joseph Kovach, IPM Program, The Ohio State University

10:30 **Marketing Session** – Internet-Based Resources for Small Fruit and Vegetable Growers - Charlotte Dugan, Reference Librarian, Meyer Library, Online Media Marketing - Lane McConnell, Farmers' Markets, Agritourism & Organics, Mo. Dept of Agriculture, Online Marketing with Missouri Exchange - Dr. Michael Gold, Associate Director MU Center for Agroforestry and Ina Cernusca, MU Agroforestry Marketing Research Team

1:30pm **Vegetable Session** – Vegetable Grafting - Dr. Sanjun Gu, Horticulture Specialist, Lincoln University, Nuts and Bolts of Market Farming - Emily Oakley and Mike Appel, Three Springs Farm, Oaks, Ok.

3:30 **Blueberry Session** – 30 Years of Blueberries in Missouri - Dr. Ben Fuqua, Professor of Soil Science, Missouri State University, Japanese Beetle: Where did it come from and what to do about it - Dr. Joe Kovach, IPM Program, The Ohio State University

Wednesday February 18, 2009 - Trade Show til noon

8:30am **Strawberry Session** – Plasticulture Strawberry Production without Fumigation: Can it work? - Jeffrey Kindhart, Senior Research Specialist, University of Illinois, Understanding Pest Control Management in Strawberries, Jim Goodson, Goodson Berry Consulting and Supply, Arkansas Strawberry Growers

10:30 **Alternative Crops** – Old and New Ideas for Structures, Small Farm Equipment, and Growing Techniques - Bryan Boeckmann, Rocky Top Acres, Westphalia, Mo., Preventing Injuries through the Smart Use of Tools - Karen Funkenbusch, Missouri AgrAbility Project, Progress in Elderberry Production and Research - Patrick Byers, Regional Horticulture Specialist, Southwest Region, University of Missouri Extension and Andy Thomas, Research Associate in Horticulture, University of Missouri, Southwest Center Agricultural Experiment Station

For more information and to download the registration form, go to <http://www.mtngrv.missouristate.edu/commercial/conference.htm> or contact Pamela Mayer PMayer@MissouriStat.edu Conference Facilitator 417-547-7533. Missouri State Fruit Experiment Station, 9740 Red Spring Road, Mountain Grove, Mo. 65711-2999.

Grow Native! Landscape Design with Missouri in Mind

Grow Native! Landscape Design with Missouri in Mind, a day-long workshop devoted to using native plants in landscapes large and small, is moving to the northeast region of the state. Grow Native!, a joint program of Missouri Department of Conservation and Missouri Department of Agriculture, along with local partners, is sponsoring the day-long workshop Friday and Saturday, Feb. 20, and 21, in Kirksville. While content is much the same for both workshops, the Friday workshop is geared toward landscape professionals and the Saturday workshop toward homeowners. Similar workshops have been offered in Springfield, St. Joseph and Cape Girardeau. A central Missouri workshop is set for January 30 and 31 at the Runge Conservation Nature Center in Jefferson City.

Each workshop includes sessions on natural communities, how to match plants to property conditions, how to establish a prairie planting and how to select trees for your landscape. The day begins with a presentation by Dave Tylka, author of *Native Landscaping for Wildlife and People*, who will set the stage for the rest of the day by helping attendees understand the benefits of native plants for both landowners and wildlife. MaryAnn Fink, a horticultural consultant, will wrap up the day by describing outstanding native plant combinations and how to use them in a landscape.

Complete details are available at www.grownative.org. Click on Workshops and Events, then the day of the event. You will find more details and downloadable registration forms.

For more information:

Barbara Fairchild (barbara.fairchild@mdc.mo.gov or 573-522-4115 ext 3833)

Tammy Bruckerhoff (tammy.bruckerhoff@mda.mo.gov or 573-522-4170 or 573-522-4171)

Coming Events

Landscape Design with Missouri in Mind (landscaping with native plants), Jefferson City, January 30 (landscape professionals) and 31 (landscape enthusiasts). Contact Barbara Fairchild, Grow Native! Barbara.Fairchild@mdc.mo.gov

24th Annual Grape and Wine Conference, February 7-9, 2009, Tan-Tar-A Resort, Osage Beach, Mo. <http://www.midwestgrapeandwineconference.com/>

29th Annual Missouri Small Fruit and Vegetable Conference February 16, 17, 18, 2009 Clarion Hotel, Springfield, Mo. <http://www.mtngvr.missouristate.edu/commercial/conference.htm> Contact Pamela Mayer PMayer@MissouriState.edu 417-547-7533

Landscape Design with Missouri in Mind. Kirksville, February 20 (professionals) and 21 (enthusiasts).). Contact Barbara Fairchild, Grow Native! Barbara.Fairchild@mdc.mo.gov

Beginning Vegetable Workshops. February 19th in Rich Hill, February 20 in Lamar, February 25 in Jamesport and February 26 in Morgan County. Contact James Quinn QuinnJa@missouri.edu 573-634-2824

Missouri Organic Association Conference. February 21. Lincoln University's Carver Farm in Jefferson City, Mo. Contact Debi Kelly, Missouri Alternative Center kellyd@missouri.edu 573-882-1905.

Growing to Sell at a Farmers' Market. March 6, 2009. Springfield Library Center. Contact Lane McConnell, Missouri Dept of Agriculture Lane.McConnell@mda.mo.gov 573-526-4984

Pruning Workshop. March 7. State Fruit Experiment Station. Mountain Grove, Mo. Contact Pamela Mayer PMayer@MissouriState.edu 417-547-7533.

High Tunnel Workshop. March 12. State Fruit Experiment Station. Mountain Grove, Mo. <http://mtngvr.missouristate.edu/commercial/HighTunnel.htm> Contact Pamela Mayer PMayer@MissouriState.edu 417-547-7533.

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