



The Berry Basket

Newsletter for Missouri Small Fruit and Vegetable Growers

Volume 7 Number 2

Summer 2004

Contents:

It's 'T' Time	1
Routine Maintenance of Roses	3
The Midwest Gardening Symposium II	4
Dr. Jim Moore Retires	7
Horticulture in Uzbekistan - Part 2	8
Cedar Apple Rust	11
Consider a Small Vineyard	12
Japanese Beetles	14
Coming Events	15
National Library Legislation Day	16

“It’s ‘T’ Time”

By Ben Fuqua

Professor, Soil Science, SMSU

“T” time has different meanings to different folks. For some, it means a time to start chasing that little ball around the golf course, to others it’s time to cool off with a tall glass of iced tea, but to blueberry growers’ “T” time means “test” time; time to collect soil and leaf samples for assessing the nutrient status of plants.

Soil tests: While soil testing can be done at any time during the year, it is recommended that soil samples be taken at the same time as foliar (leaf) samples in order to compare soil nutrient levels to the corresponding nutrient concentrations in the plant. Soils tests are useful in monitoring the amount of nutrients available for plant root uptake.

The first step for any soil test is a “good” soil sample. A good soil sample can be obtained by collecting sub-samples from several locations within the planted area. Sub-samples should be taken from the plant row (preferably between plants), starting at the soil surface to a depth of 6-inches. Collected sub-samples should be combined in a clean, plastic bucket, thoroughly mixed, and a composite sample of approximately 1 pound of soil removed for laboratory testing. Problem areas in a planting, plants located on a different soil types, or unusual spots (wet, rocky, eroded, etc.) should be avoided (or treated as a separate sample) if they do not accurately reflect the soils in the entire planting. The composite sample should be air-dried prior to sending to the laboratory for analyses. The Missouri Soil and Plant Testing Laboratory (coordinated by

From the Editors

by Marilyn Odneal

We are dedicating this issue of the Berry Basket to Dr. Jim Moore, Director of the State Fruit Experiment Station and Head of the Department of Fruit Science, in honor of his retirement on June 30th after 29 years of service. Jim supported this newsletter which is a joint effort of the State Fruit Experiment Station of SMSU and the University of Missouri Outreach and Extension. Everyone on the staff of the Berry Basket will miss Jim, and we wish him all the best for the future.

Berry Basket Newsletter Staff:

Patrick Byers, Gaylord Moore and Marilyn Odneal - eds.

Pamela Mayer - layout, proofing, and mailing list.

Teresa Inman - posting and sending.

Please direct comments to:

Marilyn Odneal

SMSU - Mountain Grove

9740 Red Spring Road, Mountain Grove, MO 65711-2999

phone: 417-926-4105, fax: 417-926-7421

e-mail: mbo774t@smsu.edu

Internet: <http://mtngrv.smsu.edu>

University Outreach and Extension) and several commercial soil testing laboratories are available for growers to use. If a commercial laboratory (particularly an out-of-state lab) is selected, be sure to request that “Missouri” soil test procedures be used for both the analyses and interpretations.

A “routine” Missouri Soil Test Report includes measurements of soil pH, % organic matter, available phosphate, potassium, calcium, and magnesium contents. Neutralizable acidity (a measure of residual soil acidity) and the cation exchange capacity (CEC) of the soil are also reported. Since highbush blueberries require a more acid soil than most other crops for maximum growth and production, the soil pH measurement is of utmost importance. On Missouri’s Soil Test Report, the soil pH is reported as both pHs (soil:CaCl₂ suspension) and pH (soil: distilled water suspension). While the resulting values will differ slightly (pHs normally 0.1 to 0.5 units lower), both methods accurately measure the same thing, soil acidity. Thus, the optimum soil pH of 4.7 to 5.2 for growing blueberries would be equal to a pHs of 4.2 to 4.7 on the Missouri soil test report.

Soils with a pHs/pH either higher or lower than the recommended range will require an application of an acidifying (to lower pHs/pH) or base-forming (to increase pHs/pH) compounds. Most times, only slight changes in fertilizer materials or application methods are needed to correct the problem, but in some situations major adjustments are required. Changing the soil pH is rather easy to do, but keeping the soil pHs/pH in the recommended range for blueberry plants is difficult in Missouri soils and requires regular (at least annual) monitoring for best results.

The other soil test measurements of phosphorus, potassium, calcium, and magnesium are not used as intensely as the pHs/pH results, but can often help identify potential problems in blueberry plantings before they become serious.

Foliar (Leaf) Analyses: A leaf or foliar test has become an important part of a good nutritional

management system in blueberries. A leaf analysis measures the nutrient concentration in the plant tissue, which provides a more accurate measurement of nutrients actually absorbed by the plant roots. The results of the leaf analyses can then be compared with “sufficiency” levels of specific nutrients (see below) established for Missouri blueberry plants through research and long-term plant growth studies.

Leaf samples should be taken just after harvest, as the nutrient levels are more consistent in blueberries at this time than during the early growth and production stages. To obtain a “good” representative leaf sample, 30 to 50 fully expanded leaves from the current years growth should be collected from several plants in the sampling area. Leaves that are dusty need to be gently rinsed and blotted dry with paper towels. Allow leaves to air-dry before sending them to the laboratory. Leaves from different varieties should be kept separate and sent in as two different samples. Avoid collecting leaves from weak, diseased, or unhealthy plants, unless they are to be analyzed as separate samples. The Missouri Soil and Plant Testing Laboratory at Columbia as well as several commercial laboratories are available for analyzing plant samples.

Foliar Nutrient Levels For Missouri Blueberry Plants*

Element	Sufficiency Range
Nitrogen(N)	1.50-2.10%
Phosphorus(P)	0.07-0.12%
Potassium(K)	0.40-0.80%
Calcium(Ca)	0.40-0.90%
Magnesium(Mg)	0.10-0.30%
Sulfur(S)	0.10-0.20%
Iron(Fe)	40-70 PPM
Boron(B)	20-50 PPM
Manganese(Mn)	40-250 PPM

* established from analyses of several varieties of highbush blueberries grown in Missouri. (4-year evaluation)

Conclusion: Nutrient management is a key factor in producing high yields of quality blueberries. Providing the proper amount and balance of plant nutrients is crucial for sustained plant growth and berry production. Soil and leaf testing are two good tools that Missouri growers have available in assessing the nutrient status of blueberries. Now is the time to collect both soil and leaf samples, making July and August “T” time in Missouri!

Routine Maintenance of Roses

By Jennifer Barnes

Horticulture Specialist, MU

The remarkable beauty, color, and scent of roses make them one of the most popular flowers in the world. Roses are well adapted to many different environmental conditions, but they do need proper care after planting to develop into beautiful and productive specimens.

All roses benefit from mulching. Mulch should be 2-3 inches deep and placed over the bed or around individual plants. This helps keep the roots cool, moist and reduces watering. Keep the mulch away from the base of the stem to reduce rotting or disease.

Roses prefer a slightly acidic soil pH from 5.5 to 6.5. Once established, they need additional fertilizer for best performance. Generally, roses need a higher percentage of phosphorus than nitrogen or potassium. Therefore, analyses such as 5-10-5, 4-8-4, or 4-12-4 are good maintenance fertilization for roses. However, if unable to find fertilizers with these or similar analyses, a 1-1-1 ratio such as 8-8-8 or 12-12-12 may be used. Aged manure is excellent for a mulch or for incorporating into the soil. Never use fresh manure as there is a chance you may burn your plants. Manure should be spread on the surface to a depth of 2 to 3 inches. The first application of fertilizer should be given in spring after danger of severe freeze is past. Additional applications should be made about every six weeks. Do not fertilize roses after July. It is best

to reduce fertility in the fall to help harden the plants for winter.

Roses are susceptible to several insects and diseases. Most can be controlled with sprays available from garden centers or nurseries. The first step to good control is in identifying the problem. A successful control program includes a regular spray program, using the sprays carefully as indicated on the label. Thorough spraying of both the upper and lower leaf surfaces is important. Liquid sprays are generally more effective than dusts, especially for disease control.

Black Spot is probably the most destructive and discouraging pest of roses. As the name implies, black spots with fringed margins appear on the leaves. Spots enlarge as they develop, until the leaf yellows and finally drops off. This defoliation, if severe will weaken the plant, reduce flowering and make the plant more prone to winter damage. It is most severe in wet seasons, in wet climates, and on plants in locations where there is little air movement. A wet leaf surface is essential for its spread.

Plant roses where air movement is good and where the sun hits the plant early in the morning to cause rapid foliage drying. On the more susceptible varieties, a regular spray with a good fungicide is important. Frequent spraying may be necessary during wet periods. Spray shortly after rains whenever possible.

Cleanliness around plants is also important, since the fungus is carried over winter by dead leaves on the ground and infections on the stem. Rains and splashing water spread spores from old leaves or stems. If you have only a few plants and can watch them closely, pick off all infected leaves as soon as you see black spots developing. This is especially helpful in early spring when the disease is just getting started.

Powdery mildew is a disease more common to some varieties and types than others. Leaves develop a grayish, powdery growth. Young leaves and tips are usually most seriously affected. Leaves

become deformed and crumpled. The disease thrives best in high humidity. As a result, it becomes most severe on roses close to ponds, streams or other warm, damp conditions. Where this disease is a problem, fungicides can give good control. Thorough coverage is important. Ramblers are particularly susceptible to this disease.

Generally less prevalent than black spot or mildew, but very destructive when present, is brown canker. Infection may take place in summer. In late winter or early spring, these small purple-tinged or white spots develop into large brown patches. Infected canes may grow poorly or die. Best control is to cut out infected canes well below the lowest point of infection.

Other diseases include rust, crown gall, anthracnose, and petal blight. These are generally less common, however, than the three previously listed.

Aphids are the most common insect pests of roses. Sometimes called the plant lice, they are soft-bodied, green, brown or reddish colored. They are usually abundant in soft growing tips and on the stem immediately below the flower buds. Severe infestations may deform the leaves, stems or buds. Several good insecticides are available for control. Begin sprays as soon as noticed in early spring. Summer infestations are usually not severe if spring control was obtained.

Spider mites are another insect pest of roses, and often can be difficult to detect and control. Mites are very small, hardly visible to the naked eye. Tiny webs between veins on lower sides of leaves give indication. As mites feed, the leaves become yellowish and finally brown. Mites are most serious in hot, dry weather. When present, an effective miticide must be used frequently. In severe infestations, sprays about every four days will be necessary to clean up the pest.

To keep your roses looking healthy and productive monitor them regularly for insect pests and diseases, follow a spray schedule, and provide routine maintenance as needed.

The Midwest Gardening Symposium II

By Marilyn Odneal

Horticulture Outreach Advisor, SMSU

The second day of the Midwest Gardening Symposium, held at the Morton Arboretum in Lisle, Illinois, began with an interesting panel presentation entitled "Contrasting Designs". Three landscape architects were challenged to design a landscape for the same house and yard, but each designer was assigned a different client and budget. Peggy Pelkonen, Assistant Landscape Architect at the Morton Arboretum, Bob Hursthouse of R.S. Hursthouse and Associates, and Chuck Hyams, of Scott Byron and Company, Inc. were the three designers featured. Many different ideas and considerations were discussed and three different designs were drawn up and displayed. No matter what the situation, a properly designed landscape will increase the value and curb appeal of your home, will enhance the use of both your indoor and outdoor living space, and will reflect the personality of the homeowners.

After lunch, John Ball, Professor of Forestry at South Dakota State University presented "Spare the Saw and Spoil the Tree". This talk focused primarily on deciduous trees and shrubs. Dr. Ball's lively presentation stressed the importance of hiring insured certified arborists for big tree work. Dr. Ball stressed that the person you hire be knowledgeable. If the person you hire cannot identify the trees, he or she should not prune them.

Dr. Ball advised NOT to prune a tree at planting since this will remove potential leaf area that manufactures food for the tree. Once the tree is established in the landscape, usually a couple of years after planting, training begins. He recommends not to remove the lower limbs right away. Leave them for a few years or until they are about the size of your finger, since these limbs will help develop the taper and strength of the trunk. It is

nice if you can leave the lower limbs intact on trees, particularly little leaf lindens and American beech.

Most of the pruning should be done in the first 10 to 15 years of the trees life, up to when the tree is 10 to 15 feet tall. It is important to prune the tree to a single leader. If there are two leaders growing co-dominantly, be sure to remove one of them before it is 3 inches in diameter. When selecting permanent and temporary branches, be sure to remove any that are greater than $\frac{1}{2}$ the diameter of the leader, as these are considered challenging branches. Leave the permanent branches about 6 to 12 inches apart on small trees that will be less than 30 feet at maturity and about 12 to 18 inches apart for larger trees that will be taller than 30 feet at maturity. It is good to have the branches spiral up the trunk.

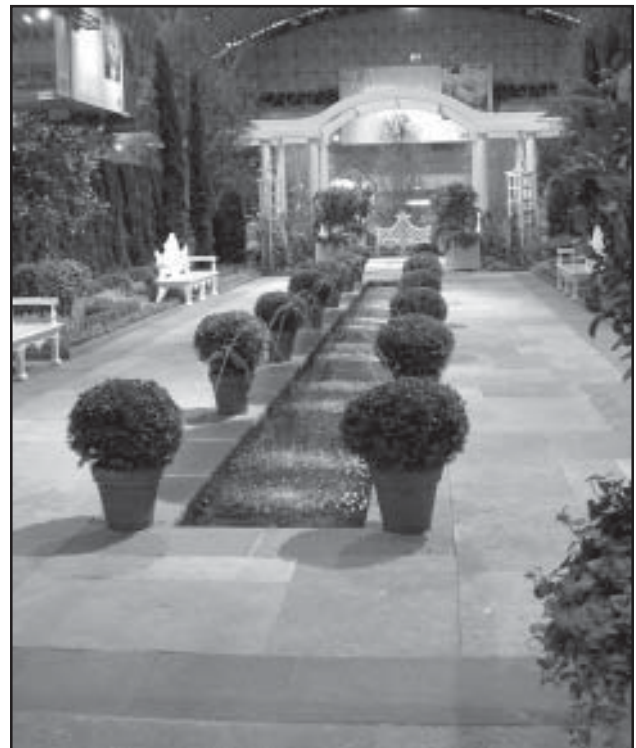
Once the tree is mature, it has established a balance with its environment and requires only minimal pruning if any. If pruned severely when mature, the tree will either be deformed (you often see this when trees are topped by utility lines) or killed. Pruning the mature tree should consist of canopy "cleaning" where dead, dying, diseased or damaged branches are removed.

We then traveled back in time with Nina Koziol, a garden designer and writer, who presented "A Midwestern Garden", a history of garden design in the Midwest. Ms. Koziol began in the period from 1840 to 1870 when the landscape architect Andrew Jackson Downing had the most profound influence in his day. Gardens at this time were located out and away from the house, pedestals and urns were popular, and evergreens were promoted to give winter interest to the Midwestern landscape. Doctors of the period advised against placing plants near the house because foundation plants would trap stale air inside the home and promote diseases such as tuberculosis. Identical husband and wife trees were often planted as a pair on the grounds and other commemorative trees were also popular.

The Victorian era saw many elaborate, high maintenance carpet beds and a Golden Age of Horticulture with numerous new and exotic plants available.

The formal Victorian style began to change when Frank Scott, in 1870, wrote the "Art of Beautifying Suburban Home Grounds" and promoted fragrant shrubs planted at the foundation of the house and expanses of mowed lawn. The mass production of the lawn mower made this possible, so the 1900s to the 1950s transitioned from the carpet beds of the Victorians to more informal plantings. In the 1930s the cottage garden with flowering shrubs and intimate seating was popular.

By the 1950s, Thomas Church had become one of the leading landscape architects in the United States. Church's designs stressed the need to reduce maintenance while providing privacy and beauty. He introduced the idea of garden "rooms" designed for living, as an adjunct to the functions of the house. His ideas are the foundation for landscape design today.



Oscar de la Renta's formal garden display at Navy Pier



Formal entryway on the “Stroll Down Crab Tree Lane” garden



Upside-down white tulips in the tablescape area of the Chicago Flower and Garden Show

We were escorted back to the present by Craig Bergmann of Craig Bergmann Landscape Design, Inc. who concluded the lecture series with “Garden Inspiration”. He showed us many examples of his designs and talked about what inspired him. He certainly inspired us with his work at the 10th annual indoor Chicago Flower and Garden Show that we visited on Sunday. The 9-day show is held at Navy Pier in Chicago and is the second largest show in the city with an attendance of over 120,000. There were 25 different gardens designed for the theme of the show, “Public Places, Private Spaces”, and over 150 exhibitors along with numerous daily seminars on gardening.

Craig Bergmann’s “Outside In” garden began in a town house vestibule, leading out a doorway to a path meandering through a beautiful collection of plants beginning with warm hues, through the spectrum of color, and ending in cool blue and violet hues. The path featured flowers and foliage in color and texture variations found in the Midwest. Oscar de la Renta’s Garden, hosted by the Mayor,

showcased the finest formal features of the de la Renta 400 acre estate in Kent, Connecticut. “A Stroll Down Crab Tree Lane” from the Batavia Plain Dirt Gardeners and Fiskars Garden Tools featured a late Victorian street scene with storefronts and doorways decorated with window boxes, hanging plants and lovely container plantings. The Tale of Two Villages from the Garden Club of Oak Park and River Forest with Andrea Green designed a garden inspired by Frank Lloyd Wright. The gardens were very diverse and interesting, including a Zen garden, tablescapes, floral arrangements, and a surrealistic garden inspired by the paintings of Salvador Dali.

The Chicago Flower and Garden show was a wonderful display of garden design past present and future. Our group was fortunate to get a little behind the scenes introduction by the director of the show, Kenton Morris. It was difficult if not impossible to absorb everything that was displayed in the time we had to spend. In any case, the Flower and Garden Show was like fireworks at the end of the excellent Midwest Gardening Symposium.

Dr. James F. Moore, Jr. Retires

Dr. James F. Moore Jr., the sixth Director of the State Fruit Experiment Station, retired on June 30, 2004, after 29 years of service. A native of Kentucky, Dr. Moore served in the army before earning a Bachelor of Science degree from Western Kentucky State College in 1965. He earned a Master of Science degree from Clemson University in 1969, after which he worked as a plant pathologist for the Guam Department of Agriculture. Dr. Moore earned a Doctorate degree from the University of Arizona in 1976.

Dr. Moore joined the State Fruit Experiment Station as Research Plant Pathologist in 1975, was appointed Associate Director for research and advisory programs in 1980 and Director of the station in 1984. He was instrumental in the transfer of the Missouri Grape and Wine Advisory Program from the University of Missouri-Columbia to Southwest Missouri State University in 1985. Dr. Moore became head of the Department of Fruit Science when it was established in 1994.

The employees, administrators, and friends of the State Fruit Experiment Station held a retirement picnic in honor of Dr. James Moore on July 13th. A delicious barbeque lunch was followed by speeches in honor of Dr. Moore given by Dr. Laszlo Kovacs,



*Dr. James F. Moore, Jr.
State Fruit Experiment Station
Director 1984 - 2004*

Dr. Martin Kaps and Mr. Patrick Byers of the State Fruit Experiment Station, Dr. John Keiser - President of Southwest Missouri State University, Dean Larry Banks of the College of Natural and Applied Science, Dr. Carol Silvey of West Plains, and former State Representative Mary Lou Sallee. Everyone enjoyed the music provided by the Wright County Bluegrass Band for the remainder of the celebration.

Throughout his career, Dr. James Moore Jr. has been a strong supporter of the Missouri fruit industry securing funding for research and advisement in excess of \$2.5 million dollars. His guidance and resolve has contributed greatly to the body of knowledge in the area of fruit science as well as to the development of the State Fruit Experiment Station. Jim plans to move back to Kentucky where he and his wife, Donna, will plant a peach orchard. We all wish him many fulfilling and fun years ahead.



Dean Banks speaks

Horticulture in Uzbekistan – Part 2

By Patrick Byers

Fruit Grower Advisor, SMSU

As mentioned in the last issue of “The Berry Basket”, Andy Thomas of the University of Missouri and I were recruited by Winrock International, an international non profit agency that administers projects in many countries, to take part in the “Farmer to Farmer Exchange Program”, a program funded by the US Agency for International Development. The assignment was to Uzbekistan, and initially we were to take part in the assignment in March 2003. Events in Iraq made travel to this part of the world risky at that time, and our host country cooperater, the Andijon Networking Center, was able to reschedule the assignment for Sept-Oct 2003.

The title of our scope of work was “commercial gardening and the growing and selling of seedlings”. This title was somewhat vague, and once in country we learned that the actual assignment bore little resemblance to the original description. The assignment location was the Ferghana Valley, and our base of operation was Andijon, the capital of Andijon province and the location of the host country cooperater, the Andijon Networking Center. The assignment included site visits and consultations with horticulturists, office visits with farmer clients of the Networking Center, advisement meetings with staff of the Networking Center, and an end of project report.

The Ferghana valley comprises the eastern portion of Uzbekistan. This region is the most densely populated region of Uzbekistan, and is made up of three provinces (Ferghana, Andijan, and Namangan), as well as parts of Tajikistan and Kyrgyzstan. Over 6 million people live in the valley. The valley is intensely cultivated in a variety of crops, although cotton is the primary crop. Bordered by the Tian Shan Range on the north and



The fertile Ferghana Valley

the Pamir Alai Mountains on the south, the valley includes 22,000 square km (8,500 square miles). Most of the cropland is irrigated.

The in-country host for the assignment was the Andijon Networking Center. The complete scope of the Networking Center was somewhat difficult to understand. We experienced several aspects of the Center – providing consultation on production practices to farmer clients, providing English instruction to students, and providing computer based services to clients. The head of the Networking Center was Kozimjon Turdaliev. Kozimjon held various government positions during the Soviet period, and retained his influence after independence. The director of the Networking Center was Gholibjon Mahmudov, who acted as our companion and translator.

While we consulted with many farmers, the following four farms were among the most innovative and interesting. On September 26 we visited Mansurov, a branch experiment station of the Shroeder Agricultural Institute in Tashkent. In Soviet times Shroeder maintained branch stations in all provinces of Uzbekistan, and a comprehensive research program investigated many aspects of fruit production at Mansurov. Since independence funding for research has disappeared, and Mansurov has shifted emphasis to production of wheat, rice, cotton, and fruit. The facility also produces rose and fruit nursery stock.



Staff of the Andijon Networking Center

Mansurov has many of the characteristics of a shirkat farm. Mansurov covers 300 hectares, and over 550 people are employed at the facility. Apple, pear, and peach are among the fruits propagated at Mansurov, and several hundred thousand rose nursery plants are budded annually. A finished fruit tree sells for 15-20 cents, and the trees are sold to both shirkat farms and to independent farms. We observed work crews that were budding roses. The process requires three skilled workers – the first removes suckers from the rootstocks and opens a cut on the rootstock; the second prepares the bud scion and inserts the bud into the cut; and the third wraps the budded rootstock with plastic tape. We toured apple and pear rootstock production fields, and observed Persian walnut seedling fields.

A highlight of September 29 was the visit to the farm of Mr. Bozorov Muhammadjon. The farm consists of primarily roses, squeezed in among cotton fields. As is customary during a farm visit, we were treated to refreshments, in this case a delicious melon called a “Bory Kalla” (wolf’s head). Mr. Bozorov Muhammadjon and his son Mr. Bozorov Murodiljon produce rose nursery stock (over 1 million plants annually), cut roses, and other cut flowers. We walked the rose propagation field, observing budding. They operate three crews, fifteen people total, and can bud 10,000 to 15,000 roses per day. The rootstock used is *Rosa canina* seedlings. Following the tour Mr. Muhammadjon

showed off his Volga station wagon (a Soviet make)-twenty years old and still running. We next drove to a greenhouse site where winter production of roses is carried out. The production is timed for March 8, which is Russian Women’s Day (Valentine’s Day).

We consulted several times with Mr. Mirzahodjeyev Mahmudjon and his son Mirzahodjeyev Muhammadziyo, flower growers and marketers. On September 28 we began a visit with refreshments – the first course was peaches, figs, almonds, sheep cracklings, watermelon, pomegranates, and tea; the main course was an immense platter of plov, a rice dish with lamb meat. Following the feast we visited a greenhouse where they grow calla lilies for cut flowers. We then visited their home where they also grow large numbers of ornamental tropical pot plants. They are undertaking a construction project there, adding a rooftop greenhouse and additional greenhouse space for propagation and production. In addition to marketing their own crops, these farmers act as wholesale purchasers of crops from other farmers. For example, they purchase cut carnations and amaryllis from several farmers, which are then shipped to Tashkent and Russia. These farmers were very innovative, and shared plans for producing rose oil (from previously discarded rose flowers), producing



Rose budding crew member wraps rootstocks with plastic strips at Mansurov

prayer beads from *Elaeagnus* fruit, and efforts to market potted plants in Europe and Russia.

Also on September 28 we traveled to a village called Hakan for a visit with a grower of tomatoes, cucumbers, and flowers. We had refreshments again, mercifully smaller in scope, with the farmer, Mr. Umaraliyev Qodirjon. This farm is a typical dekhkan hojalik farm. The family provides the labor for the farm, including Mr. Qodirjon's twelve grandchildren, and much of the production takes place in a courtyard formed by the family's living quarters. Although small in scale, this operation was very impressive. Two cultivars of *Hippeastrum* (amaryllis) were grown for cut flowers and also for sale of the bulbs. A second greenhouse was dedicated to production of calla lily. The crops from this farm are marketed through Mr. Mirzahodjayev Muhammadziyo, mentioned earlier.

While the horticulturists that we worked with were well trained, and successfully produced a wide array of crops, challenges face Uzbekistan horticulture. Current production is based on non-sustainable inputs. Extensive irrigation, critical to production in the arid climate of Uzbekistan, has depleted water resources. Water is supplied through inefficient supply systems, and irrigation methods are wasteful. Low wages paid to agricultural labor has led to a high rate of rural poverty, which in turn has led to unrest. The advantage of



*Calla lily greenhouse at the farm of Mr. Qodirjon.
Note furrow irrigation*



Unusual Uzbek fruits – from bottom left Asian pear, local apple variety, pomegranate, eleagnus, and quince

inexpensive labor currently enjoyed by Uzbekistan horticulture will not last forever. As mentioned earlier, serious environmental and health problems are a legacy and a continuing problem related to agriculture in Uzbekistan. The Uzbekistan government continues to closely regulate agriculture, which has resulted in inefficiency and corruption. Since independence many of the production inputs formerly available from Russia are in short supply or unavailable. Markets formerly available in other republics of the Soviet Union are no longer assured. Processing facilities for horticultural crops in Uzbekistan are lacking. Finally, non-biased agricultural research and extension services are lacking in Uzbekistan.

Our visit to Uzbekistan was fascinating, doubly so because we visited during a time of transition for Uzbekistan's horticulture and agriculture.

Cedar Apple Rust

Tim Baker

Horticulture Specialist, MU

In rainy periods during the spring, it's common to receive calls from homeowners who report strange, bright orange balls growing on their cedar trees. These invaders grow long, slimy tentacles which sometimes cause great concern.

What the homeowner has found is a disease organism with a complex life cycle that involves two species: cedar and apple. This disease needs both hosts to complete its life cycle and reproduce.

The portion of the life cycle that involves cedar trees is not as serious, from a commercial perspective, as the apple portion. This disease can be a serious pest of apples, and orchard owners always include fungicides in their spray program to insure that cedar apple rust is not a problem.

On cedars, the fungus produces reddish-brown galls from 1/4 to 2 inches in diameter. In the spring, when conditions are wet, these galls produce bright orange gelatinous protrusions known as telia horns, or spikes. Microscopic fungal spores are formed on these structures which are carried by the wind to nearby apple trees.



Cedar galls with bright orange telia horns in spring

On apple trees, the fungus produces pale to bright yellow spots on the leaves. The spots will enlarge and turn orange. Unfortunately, cedar apple rust can affect apple fruits as well, which is why orchard owners take measures to keep the disease under control. Later in the summer, spores are formed which again are carried by the wind back to cedar trees.



Yellow orange cedar apple rust spots with dark centers on leaves

Most of the guide sheets discussing cedar apple rust concentrate on controlling the disease in apples, since the greatest economic loss occurs in orchards. Fungicides are available which can do a good job controlling the disease. There are also apple cultivars that are resistant to cedar apple rust. This provides a good way to keep the disease out, especially for homeowners.

The guide sheets generally seem to be less concerned about the disease on cedar trees. The disease is certainly unsightly, but there is seldom any injury to the tree. The galls can be picked off smaller trees, or you may spray your cedar tree with an approved fungicide.

If you would like more information on cedar apple rust, call your local Extension center and ask for guide sheet G7870: "Cedar Apple Rust." It has some excellent photos. You may also find it on the web at: <http://muextension.missouri.edu/explore/agguides/pests/g07870.htm>

Consider a Small Vineyard

Paul Gospodarczyk

Fruit Science Student, SMSU

Starting a small vineyard can be a risky endeavor. This project requires a large amount of capital to start, and returns are not realized for a number of years. Furthermore, with only a few acres it may be difficult to find a winery or other processor, who will sign a contract committing to buy the yearly crop. It may be possible to sell to home winemakers, but this market is limited. If table grapes are grown they can be sold fresh at farmer's markets or roadside stands. So, it is important to locate a market before investing money and time into this kind of project.

However, you may decide the benefits of a small vineyard outweigh the potential risks. This could be a good way to utilize fallow land, provide meaningful interaction with customers, or present an enjoyable retirement challenge. Whatever the reasons may be, it is important they are worth the hard labor and financial risk.

The equipment for a small farm is different from what is used by major producers. Most current publications and cost analyses investigate vineyard establishment on a very large scale. This article will address the needs of smaller scale growers for sprayers, equipment, tools, and yearly supplies. Other areas of establishment, such as land, irrigation, the trellis, and the actual grapevines, are very similar to the information presented in other publications.

In the humid Midwest, the grape canopy must be sprayed in order to manage diseases. Therefore, the first area to review is the type of sprayer necessary for the intended size of the vineyard. If a sprayer tank is too small for the intended area of coverage the grower will spend excessive time refilling the tank and traveling between the vineyard and filling station. If the tank is too large the grower has wasted money by buying a more expensive tool

than the job requires. So, the object is to match the sprayer to the vineyard size.

A simple 50 gallon sprayer that attaches to the 3 point hitch of a tractor can effectively cover 1-3 acres. However, when nearing the 3 acre size a large amount of time will be spent refilling—especially if the sprayer is calibrated to cover 100 gallons/acre. If the vineyard is intended to be 3-6 acres it would be a better decision to use a 100 gallon sprayer that also attaches to the 3 point hitch. A vineyard larger than 6 acres warrants the investment of a 300 gallon trailer sprayer.

The tractor used for a small farm should be based on the power requirements of the sprayer. The 50 gallon sprayer needs a tractor from 25-30 horsepower to operate sufficiently. An 100 gallon sprayer works best with a 40 hp tractor, and the 300 gallon trailer should be operated with a tractor nearing 60 hp. It is important to check the width dimension on any tractor over 30 hp to be sure it will fit between vineyard rows. Implements are readily available for all these ranges of power; including small 25-30 hp tractors.

One of the most important implements for the tractor is a mower. Grapevines do not grow well with competition, so it is important to cut down vegetation in the row middles. An end loader is also valuable to growers for many random tasks that seem to surface frequently in vineyard work. Finally, a 9-inch post hole digger is necessary to set the posts of the trellis system. This tool can be purchased with the tractor, or it is possible to rent from a local hardware or farm supply store. For the amount of posts that need to be installed it is not advisable to use a hand-held auger.

A wide variety of tools are needed to train and maintain the grapevines. A good pair of pruning shears is needed for every person working in the field crew. If the field crew is only a single person, be sure to have an extra pair of shears available. The natural growth pattern of vines is to sprawl out across the ground. A tapener is used to hold these shoots up on the trellis. Finally, a 300' tape measure is necessary to lay out all the posts for the trellis

system. When it is time to install the trellis system it is wise to have a shovel and pinch point crow bar available; even if a post hole digger is being used. A pinch point crow bar is a long bar with a pointed end which will break through rocks in the soil.

Finally, there are some supplies used on a yearly basis. For the tapener to work it must be outfitted with tape and staples. One package of tape holds 24-150' rolls, and staples come in boxes of 5000. For starting a vineyard it would be wise to buy a package of tape and box of staples for every acre of grapes. Last of all, don't forget the diesel fuel for the tractor. A rough estimate of fuel consumption is 30 gallons/acre every year.

References

Equipment

Edgeller and Harper
(417) 962-4846

John Deere Dealer
www.deere.com

Sprayer

Stephens Sales Company
Ralph Stephens
417-754-2578

Tools and Supplies

Hummert International
www.hummert.com

Editor's note: *Keep in mind that an air blast sprayer is generally used to spray the canopy and is not used for herbicides that are sprayed under the vines. A good resource that describes the different types of sprayers for small vinyards is **Small Sprayers for Smaller Vineyards** by Andrew Landers, Pesticide Application Technology Sprcialist, Cornell University. The publication is available in Microsoft Word (.doc) file format at <http://www.nysaes.cornell.edu/ent/faculty/landers/pestapp/grape.htm>*

Small Vineyard Establishment Budget

Equipment

25 hp Tractor	\$12,000
End Loader	\$3,000
40 hp Tractor	\$17,500
End Loader	\$4,800
60 hp Tractor	\$22,000
End Loader	\$4,800
6' PTO Mower	\$1,200
9" Post Hole Digger	\$850

Sprayer

50 Gallon PTO	\$4,200
100 Gallon PTO	\$6,200
300 Gallon Trailer	\$10,500

Tools

Pruning Shears	\$22
Tapener	\$60
100' Tape Measure	\$40
Shovel	\$20
Pinch Point Crow Bar	\$20

Supplies

Tape 24-150' rolls/box	\$25
Staples 5000/carton	\$5
Diesel Fuel	30 gal/acre

Japanese Beetles, a Threat of Heavy Plant Damage

Gaylord Moore

Horticulture Specialist, MU

Japanese beetles (*Popillia japonica*) are becoming a major threat with many ornamentals and fruit crops throughout Missouri. Keep an eye out for them; they may be invading your area soon. Presently, heavy infestations are present in Kansas City, St. Louis and portions of Southwest Missouri. The main concern is the adult beetle which defoliates and skeletonizes many plants of ornamental and commercial value. The larvae portion of the beetle has the potential to cause heavy damage in turf but so far little, if any, turf damage has been reported in Missouri.

The Japanese beetle is about ½ inch long and is metallic green and bronze in color with a row of white tufts of hair on each side of its body. The green adult June beetle is out the same time of the Japanese beetle, but there is a very distinct difference. First, the June beetle is much larger, very little bronze, and will not display the white tufts around the abdomen as does the Japanese beetle. Adult beetles are most active from mid-July through August. They can feed upon more than 300 different species of plants, but are especially found of roses, crepe myrtle, grapes, plums, peaches and any member of the prunus family.

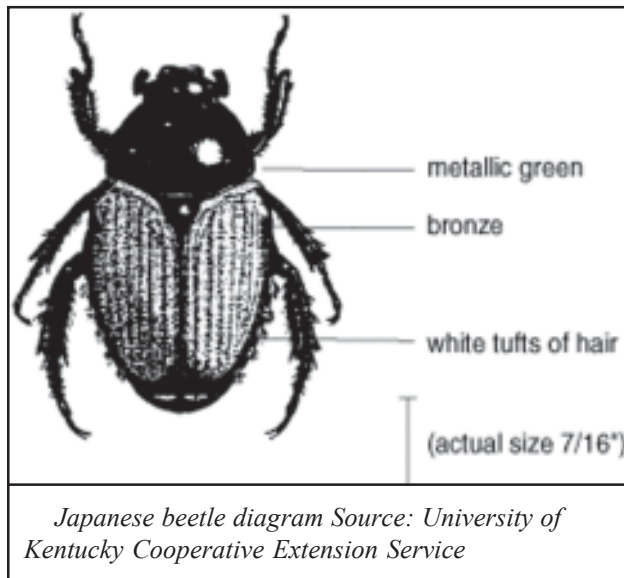
Adults can fly considerable distances (1-2 miles) to feed on leafy plants or to lay eggs. Control for any length of time can be difficult due to the constant invasion. Beetle control is most effective when there is an all out community effort from neighbors, especially in urban areas. Control should be centered on both the adult and larvae since adults do feeding damage and are responsible for laying eggs for future generations.

Japanese beetle control options

- Insecticides are effective on both adults and larvae. To protect ornamentals against the feeding of adult Japanese beetles, leaves should be coated with insecticide during the adult flight period. Homeowners should make their first application when damage is becoming intolerable and beetles are still abundant. Inspect plants for future damage and assess the need for further treatment. Carbaryl (Sevin), permethrin and malathion are effective products that may be used on both ornamentals and food crops. Read the label regarding harvest restrictions. In lawn and landscaped areas where Japanese beetle populations have been heavy preventative applications may be helpful. Products such as imidacloprid (Merit), halofenozide (Mach II), or thiamethoxam (Meridian) are available from most major lawn and garden center. These may provide excellent grub control even when applied 2 months before egg hatch (late July). However, don't expect complete control since Japanese beetles are quite mobile and can invade from outside your home area.

Alternative control applications

- Most people have heard of Milky Spore, a specific bacterial spore dust applied to the soil in the spring or early fall. Treatment may require several years to provide control. Its major limitation is that it cannot be used in combination with other grub control products. Do not apply chemical insecticides to the milky spore treated areas.
- Recent developments in the use of parasitic nematodes to control grubs have met with variable results. Under special conditions, nematodes can be effective and are a viable, environmentally sound approach to Japanese beetle grub control.
- Pheromone traps have long been used to monitor the activity of the Japanese beetle and are widely marketed and used for beetle control. However, their effectiveness is highly debatable. They may actually attract more beetles than they control, resulting in increased plant damage. Do not



put traps in or near plants that are susceptible to Japanese beetles.

For more information on the Japanese beetle and a listing of numerous plants severely attacked and those relative free of feeding by adult Japanese beetles contact me by phone at 417-862-9284 or email mooreg@missouri.edu.

Coming Events

Fruit Pest Management Field Day Tuesday, August 3, 2004 8 am - 12 noon

Free and open to the public at the

State Fruit Experiment Station
SMSU-Mountain Grove
9740 Red Spring Road
Mountain Grove, MO 65711

For further information, contact:
Pamela Mayer
417-926-4105 pam621t@smsu.edu

Joint Meeting of the Northern Nut Growers Association and the North American Fruit Explorers August 15 – 19, 2004 Ramada Inn Conference Center Columbia, MO

See the program details at <http://www.nafex.org/2004ANNUALMEETING.htm>

Print off the registration form at <http://www.nafex.org/2004REGISTRATIONFORM.htm>

For more information contact:
Jerry Lehman, Joint Meeting Chairman
jwlehman@aol.com 812-298-8733
www.nafex.org

Fall Horticulture Seminars

Sponsored by the Tri-County Master Gardeners
and the State Fruit Experiment Station

**Saturday afternoon
September 11, 2004**

Southwest Missouri State University -
Mountain Grove
9740 Red Spring Road
Mountain Grove, MO 65711

Free and open to the public.
No pre-registration required.

For more information contact:
Marilyn Odneal
mbo774t@smsu.edu phone: 417-926-4105

Conference Report: Part 1 of 3: National Library Legislation Day

By Suzi Teghtmeyer

Evans Library of Fruit Science, SMSU

Dear Readers,

I am an academic librarian, and as such often attend conferences that help me enhance my skills, learn new methods in service and research, and connect with people in the fields of general, agricultural, and horticultural librarianship. In a 3-part series, I will talk about three recent conferences I attended that have influenced me in my role as Head Librarian of the Paul Evans Library of Fruit Science and me, personally. I want to share the experiences with you so that you can better understand what librarians do, other than check out and shelve books, and what we, as a profession, are doing for the libraries and patrons we serve.

In early May this year, I attended National Library Legislation Day in Washington, D.C. Organized by the American Library Association (ALA). National Library Legislation Day is an annual event providing the opportunity for librarians nationwide, at all levels, to converge on Capitol Hill and meet with our Congress people to advocate on behalf of our libraries and patrons. Although an annual event, this was the first time I have been able to participate. The Missouri Library Association (MLA) paid the participation fees for the Missouri delegates, and our group was headed by Missouri State Librarian, Sara Parker. Eleven of us Missouri librarians were able to attend; I was one of the four academic librarians, two were associated with schools, three were public library system librarians, Sara Parker, the State Librarian, and Margaret Booker, President of MLA. Interestingly, everyone, except me, lives within an hour of the I-70 corridor, generally in the Kansas City, Columbia/Jefferson City, or St. Louis areas.

Monday, May 3rd, was ‘Briefing Day’, where all of the delegates (especially us first-timers)

learned how to approach our legislators (or their appointed staffer, which is normally who you talk with), what the key issues (talking points) were, and how to ‘advocate’ for our points of view. Some of the talking points were the SAFE Act (part of the Patriot Act that involves the seizure of the reading and check-out records of library patrons), E-Rate discounts for libraries (this program helps public libraries connect to the Internet), increasing the appropriations for improving literacy through school libraries (part of the No Child Left Behind Act), and to support the Federal Depository Library Program and Government Printing Office (so there is free public access to government information). Another issue, the one I adopted as my own to discuss, is the continued funding and increased appropriations for the Library Services and Technology Act (LSTA). This act makes available funding via grants for libraries to create additional access to information for our patrons and the public. I have received an LSTA grant, specifically the \$70,000 digitization grant I’m working on with the Fruit Experiment Station (see Teghtmeyer, Suzi. “Evans Library Receives Grant.” *The Berry Basket* 6(2) Summer 2003: 4+.

After the full delegation met, we Missourians gathered and discussed who would speak to whom, and made sure we covered all of the issues with each legislator/their staffer. After which, Sara Parker and I decided to visit the new World War II Memorial which was to be dedicated later that month. We walked to Union Station, rode the Metro to the Smithsonian stop, then in the rain walked past the Washington Memorial to the WWII Memorial. Let me say it is very humbling, and I think it does honor our veterans. Each of the states has an engraved pillar, and Sara kindly took a picture of me in front of the Missouri pillar. Afterward, we visited the Korean War Memorial, then rendezvoused our delegation again for a good seafood supper.

The next morning, my fellow delegates and I converged at the Cannon House Office Building and the advocacy began! During the course of the day, I met with staffers of Rep. William Clay, Rep.

Dick Gephardt, Rep. JoAnn Emerson (my District's Representative), Rep. Roy Blunt (we were able to meet in the Capitol – not easy with the current security measures!), and Sen. Christopher Bond (in the Russell Senate Office Building). At each meeting I expressed the need for LSTA funding, and supported my colleagues in their reports. Many of the staffers asked questions, and all expressed an interest in our issues. I'll mention that due to votes being taken on the 'The Hill', we only met with staffers of the legislators. Regardless, the staffers relayed our message and points of view to their bosses, and our purpose was fulfilled.



Missouri Librarians

Left to right: John Montre, Helen Spaulding, Patricia Bibler, Judy Daniel, Suzi Teghtmeyer, Carole Coots, Sara Parker, and Gerald Brooks.



Suzi at the Missouri Pillar, WWII Memorial

This was a marvelous experience. I was able to represent and advocate on behalf of my town, my Mountain Grove campus, my university, my state, and my profession. I met people from all over the US who love libraries, knowledge, and information-sharing as much as I do, a love strong enough to go to Washington, D.C. and advocate for it. Would I do it again? Yes, if the opportunity and capability presented themselves, I would seriously consider it.

I learned a number of valuable lessons in participating in the National Library Legislation Day. The first and most important is that anyone, even a librarian from a small Missouri Ozarks town, can go to Capitol Hill and advocate for causes near and dear to her heart. The second is to be prepared for discussion. I admit, I wish I had a deeper understanding of all of the issues before I went. However, that is why you travel in delegations – to back each other up! Also, I learned that people, regardless who they are, will listen to you if you stand straight, look them in the eye, and speak up (even if you're blonde, 5'2", and have eyes of blue!). My final lesson is, no matter how good they look, don't wear heels while hoofing about on Capitol Hill.

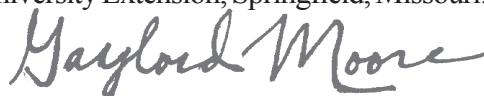
**COOPERATIVE EXTENSION
SERVICE
U.S. DEPARTMENT OF
AGRICULTURE
UNIVERSITY OF MISSOURI
CLARK HALL
COLUMBIA, MO 65211**

Nonprofit Organization
U.S. Postage
PAID
Springfield, MO
Permit No. 228

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

Your editors of The Berry Basket:

Gaylord Moore, Area Horticulture Specialist,
University Extension, Springfield, Missouri.



Patrick Byers, Fruit Grower Advisor, and
Marilyn Odneal, Horticulture Outreach Advisor,
Fruit Science, State Fruit Experiment Station,
SMSU, Mountain Grove, Missouri Missouri.



Send address changes and comments to:
Dept. of Fruit Science, 9740 Red Spring Road,
Mtn. Grove, MO 65711 or mbo774t@smsu.edu.
