Missouri Environment & Garden

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# African Violet: Nature's Cure for Winter Blahs

The dull, dark days of January are enough to dampen the spirits of even the most optimistic amongst us. The holidays are over and spring is not even close, leaving many avid gardeners with an active case of "cabin fever". Working with plants has been proven to be highly therapeutic and few house plants give more while asking for less than does the African violet. They thrive in most interior settings, provide nearly continuous color and are inexpensive to purchase. As we await the upcoming growing season, winter is an ideal time of the year to start (or add to) an African violet collection.

African violet is native to Africa, as its name implies. It was discovered in 1892 by Baron Walter von Saint Paul, German governor to the African province now known as Tanzania. He found the plant growing in shady areas of the Usambara Mountains and referred to it as his "Usambara violet". Later it was given the scientific name of Saintpaulia ionantha to honor the gentleman who discovered it. There are more than twenty species in the genus Saintpaulia most of which are similar to *S. ionantha* in appearance. All are members of the Gesneriaceae family which includes other common flowering house plants such as those in the Achimenes, Gloxinia, Sinningia and Streptocarpus genera.

Von Saint Paul sent seeds of his discovery to his native Germany where it enjoyed some success as a houseplant. It slowly spread to other European countries as a houseplant and was brought to the United States in 1926 when a California firm imported its seeds from German and British greenhouses specializing in the plant. Since that time it has been developed into more cutivars than any other flowering houseplant. The African Violet Society of America's "Master List of Species and Cultivars" contains the names and descriptions of nearly 10,000 registered cultivars.

Early hybridization of this plant involved the crossing of similar Saintpaulia species in the quest to obtain more robust plants. The result was violets with improved horticultural attributes but only with blue flowers. The reds (wines), whites and pinks that we enjoy today are the result of American hybridizers working in the 1930's and 1940's. The harder to achieve coral pink and coral red were added later. Yellow is the latest flower color to be developed.

In addition to breeding for different flower colors, hybridizers also have developed multi-colored blossoms, with petals that are striped, spotted or having edges of contrasting color (picotee appearance). Other characteristics improved include petal count, blossom count, and blossom shape.

Hybridizers also have developed variation in leaf shapes and coloration. Perhaps the biggest achievement in this area was the development of African violets with variegated leaves. Leaves with markings of white, pink or some other contrasting color are now readily available and add to the novelty of this popular plant. There are few other plants that will flower as well in low light conditions as African violet. They require at least 600 but no more than 1500 foot candles. This usually can be provided by placing the plants in windows with bright light but no direct sunlight. Some midwinter sunlight is not harmful, but avoid it at other times of the year. Bright north or east windows are usually satisfactory. If no suitable window space is available, plants grow very well under fluorescent light. Place cool white fluorescent tubes about 10 to 14 inches above the plants and illuminate 14-16 hours daily.

Since the African violet is native to warm areas their location in the home must be

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## In This Issue

# University of Missouri Extension
# Plant Diagnostic Clinic Report – 2009

The Plant Diagnostic Clinic was established in 1965 and handles samples submitted for plant disease, insect, and weed identifications, as well as management recommendations. The clinic supports county extension specialists and receives samples directly from other agencies, businesses and private citizens throughout the state. Most clinic operations are handled by clinic staff, however other MU Division of Plant Science faculty assist when needed. Samples are diagnosed by visual observation or microscopic examination. When necessary, samples are also diagnosed by culturing plant tissues, limited ELISA serological testing, the BIOLOG bacterial identification system, and PCR. Use of ELISA and PCR testing methods is generally dependent on sufficient sample volume.

In 2009, we had a 25% increase in sample submissions to the diagnostic clinic over the previous year. Most samples were submitted through the mail while some were personally delivered to the clinic or submitted digitally by email. Samples were submitted from 87 Missouri counties. Approximately 80% of the samples were received between May and September.

In 2009, woody ornamental and field crop samples represented a majority of samples submitted to the clinic, although fruit and vegetable submissions have increased this year. We also received turf, herbaceous ornamental, and forage samples (Figure 1). The five most popular plants submitted to the clinic were corn, oak species, soybean, tomato, and pine respectively. Compared to previous years, the number of abiotic issues have decreased and biotic diseases have increased, especially fungal and bacterial diseases related to wet growing conditions. Approximately 61% of samples had biotic disease problems. An additional 10% of plant disease submissions had insect/arthropod problems (Figure 2).

Sample submissions to the plant diagnostic clinic have frequently been examined by experienced agronomists or horticulturalists and do not necessarily represent the most common plant problem issues occurring in the state, but those that have been challenging to identify or treat successfully. We have identified some trends and common submissions for those species that have been sent in several times this year.

We received a few wheat samples that tested positive using ELISA testing techniques for wheat streak mosaic virus, barley yellow dwarf virus, soilborne wheat mosaic virus and wheat spindle streak mosaic virus. We also received several wheat samples that were consistent with black chaff, take-all, Septoria blotch, and scab (head blight). Common soybean problems identified this year were Cercospora blight, bacterial blight, frogeye leaf spot, sudden death syndrome, Septoria brown spot, sunburn and herbicide injuries. An unusual soybean submission from Marion county this year was brown stem rot, confirmed PCR by Dr. Dean Malvick (U. of Minnesota). Corn samples were frequently submitted with gray leaf spot, Diplodia ear rot, anthracnose (early season foliar injury to seedlings), Northern corn leaf blight, Physoderma brown spot, Pythium (root, seed, and stem rot), and herbicide injuries. Some corn foliar samples with "viral symptoms" tested positive for corn stunt spiroplasma, maize dwarf mosaic virus, cereal yellow dwarf-rpv, maize mosaic virus, and barley stripe mosaic virus.

Frequent fruit submissions were cedar apple rust and fruit rots, primarily black rot on grape and brown rot on stone fruits. We also received a number of samples from declining fruit trees where root rot issues are suspected. We detected Nectria canker on pear.

Vegetable sample submissions included a large variety of problems, although bacterial diseases were common, including bacterial leaf spots on peppers, tomatoes and pumpkins, as well as common bacterial blight on green beans, and bacterial canker on tomato. We received a large number of tomato samples this year. In addition to bacterial diseases, Septoria and early blight were common from homeowners, as well as walnut wilt from both homeowners and commercial growers. High tunnel growers submitted Sclerotinia white mold samples from both tomatoes and peppers. Chemical injuries were also common submissions.

Turf submissions were limited and primarily from homeowners. Frequently the primary problem was a management issue, however we did receive large patch from zoysia, anthracnose on bentgrass, brown patch on tall fescue, and both Pythium blight and gray leaf spot on ryegrass.

Many of the tree problems were related to wet conditions this year. We confirmed Phytophthora root rot on several samples. Armillaria root rot was frequently detected on several species. Many leaf spot samples were submitted, including anthracnose on a variety of species. Other leaf spots with multiple submissions include a Phyllosticta leaf spot on ash, tar spot on maples, Guignardia leaf blotch on horse chestnut, and Phyllosticta leaf spot on dogwood.

Some pin oak samples from Boone, St. Louis and St. Charles counties with symptoms consistent with bacterial leaf scorch were confirmed by PCR at Michigan State in Dr. Gerald Adam's lab. Tubakia leaf spot was frequently submitted on several different oak species, jumping oak gall was a frequent submission on white oak for the second year in a row. Botryosphaeria twig canker appeared responsible for the death of branch tips on both pin and white oaks, Kermes scale also seemed to be damaging the tips of some pin oaks. Some of the oak sample submissions were requests for oak wilt testing. Several samples were negative, however we did have positives in Adair, Boone, and St. Louis counties.

We had many confier disease submissions. Needle diseases were frequently submitted, especially brown spot needle blight on Scots pine, Dothistroma needle blight on Austrian pine, and Stigmina and Rhizosphaera needlecast on spruces. We have continued to receive white pine samples with "white pine decline" that display general wilting, chlorosis, bark beetle injury, pine wilt nematode (one sample) and death that we believe results from root problems and environmental stress. We had several reports and a few samples of Juniper dieback or death, especially in the spring. We found several issues with submitted samples including Phomopsis and Kabatina tip blight, spruce spider mite, cedar apple rust and sapsucker damage. Mark Schall (MO Dept. of Conservation) detected Annosum root rot on Juniper.

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Ornamental flowering (callery) pear samples were frequently submitted with decline symptoms. Often these samples had sparse foliage, and had chlorotic or red pigmentation in the leaves. Submitters described the trees as having significant dieback, sparse foliage and poor spring bloom. Some fire blight was detected, however this was less frequently submitted than in the past few years. We were able to detect Armillaria associated with a few samples and Phytophthora root rot where drainage was poor. Dr. Chris Starbuck, MU woody ornamentals specialist, also suggests delayed graft incompatibility as a possibility for some affected trees.

Other samples of note included boxwoods having Volutella blight, and Chrysanthemum samples with Fusarium wilt and/or Pythium root and lower stem rot. Several other ornamentals including petunia, impatiens, and vinca had Rhizoctonia stem rots.

Some common insect issues this year include spruce spider mite, eriophyid mites, bagworms, scales (especially magnolia scale), and Ambrosia beetles (especially granulate Ambrosia beetle in black walnut). Insects from homes that were frequently submitted include stored product insects, springtails, fall home invaders, ants, termites, and cockroaches.

More information on the University of Missouri Plant Diagnostic Clinic, fees and services are available at: http://soilplantlab.missouri.edu/plant/index.htm You can also contact the lab at plantclinic@missouri.edu or 573-882-3019.

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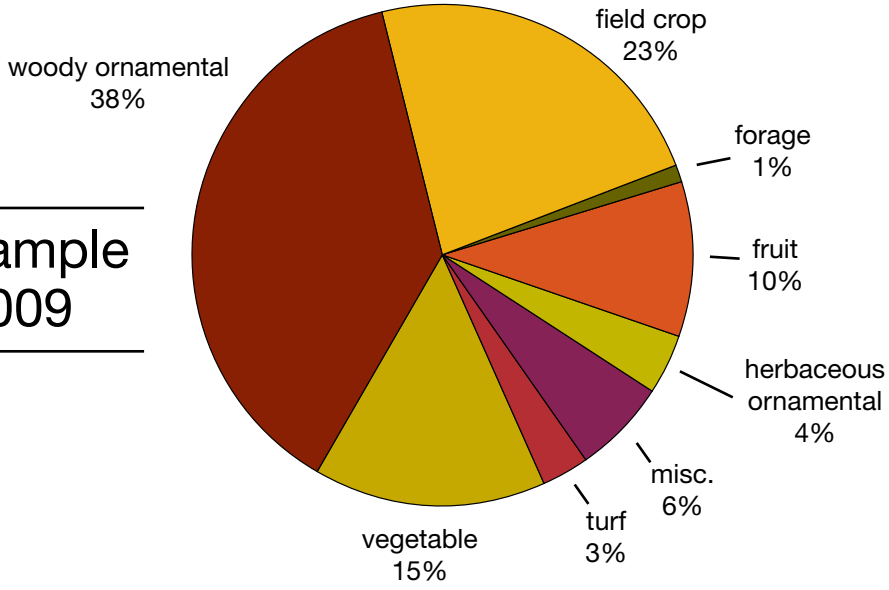


**Figure 1.** Plant sample submissions in 2009

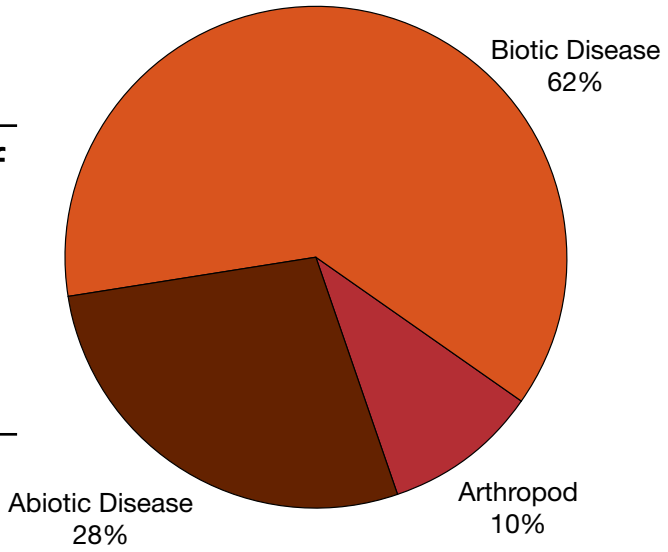


**Figure 2.** Proportion of primary diagnosis for samples submitted for plant problem analysis in 2009

# A New Year's Resolution – Better Quality Apples

This is the time of year we all make resolutions, including striving for a healthy lifestyle. As you make those resolutions, consider a simple practice such as enclosing individual apples in bags to increase the pest-free fruit from your trees. While this resolution may not result in losing ten pounds or omitting a particular vice, it will result in more useful fruit harvested from your trees with a bit of early season effort. Bagging fruit is commonly used world-wide on dwarf trees to improve the fruit finish and peel color for upscale markets. When used by homeowners, bags can also be an effective barrier against summer diseases and insects.

Before bagging fruit, a few pesticides may be applied before flowering. Dormant oil should be applied in late winter before the buds open to control mites and scale. Also, plum curculio and codling moth can infest trees before fruit are large enough to bag. Organic growers can apply Rotenone to control plum curculio. For non-organic growers, recommended pesticides for early season use can be found in the Fruit Spray Schedule at http://extension.missouri.edu/publications/index.aspx. Diseases such as apple scab, cedar apple rust, and fire blight should also be controlled. Most often this is done by selecting and planting a disease-resistant cultivar such as Enterprise or Liberty. However, if you don't have these cultivars, you may apply early season fungicides. When bagging apples, pesticides may be applied until three weeks after petal fall. After this, no other sprays are applied for the rest of the season.

Hand thinning the fruit is another cultural practice is done before bagging. When the fruit are about the size of a dime, remove all but one apple from the cluster. Also, space one fruit about ever six inches. This will allow space for the bags and result in large fruit this growing season and enhance fruit set the following year.

About three weeks after petal fall or when the apples are about one-half inch in diameter, they are ready for bagging. Two types of bags can be used. Japanese apple bags have been designed specifically for enclosing fruit and are used by commercial growers. These bags have two paper layers, with a slit for a stem and a wire embedded in the opening to secure it around the fruit. Japanese fruit bags cost less than $15 for 100 bags from a supplier such as Wilson Irrigation & Orchard Supplies (http://www.wilsonirr.com/catalog_i4342079.html?catId=272951). Once bags are securely fastened around the fruit, they are left in place until three weeks before harvest. If bags are not removed before harvest, the pigments in the fruit do not develop properly and red-skinned cultivars will be pale yellow at maturity.

If Japanese apples are unavailable, a three-pound paper bag can also be used that has been cut to about six inches in length. Although not tested, a white bag would likely be a good choice as it would be more reflective than a brown bag and prevent an increase in temperature with the bag. A wire twist tie can be used to secure the bag around the fruit. In other states, ziploc bags have also been used to enclose the fruit with holes cut in the bottom corners of the bag to allow moisture that collects in bag to drain. However, in heat stress experiments conducted at the University of Missouri, ziploc bags on sun-exposed apples increased the fruit surface and flesh temperatures by more than 10° F during the warmest hours of the day. This increase in temperature over a five day period resulted in poor red color development on the peel of apples and decreased the sugar content and acidity of the fruit.

For the best quality fruit, plan now to reduce pesticide usage and harvest nutritious apples in the fall. While other resolutions may not last, this one will be year-long.

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# Bacterial Leaf Scorch in the Midwest and Plains States

Bacterial leaf scorch (BLS) is a disease caused by the bacterium *Xylella fastidiosa* that has been found to affect shade trees of many species in various parts of the U.S. It has been confirmed for some time in coastal states from New York to Texas, and more recently, in Indiana, Kentucky and Ohio. Although large scale, systematic surveys of Midwestern and Plains states have not been conducted, samples have tested positive for BLS in Kansas, Nebraska, Oklahoma and Missouri. According to Simeon Wright, with the University of Missouri Plant Diagnostic Laboratory, BLS has been confirmed in Missouri in samples from St. Louis, St. Charles, Boone and McDonald Counties. Dr. Gerald Adams, at Michigan State University is coordinating statewide surveys in 11 states in the North Central and Plains regions. Unfortunately, pin oak samples from Columbia, MO, sent in 2009 by Wright to MSU were confirmed to have the disease.

One reason why more trees in the Midwest have not been confirmed to be infected with BLS is that a definitive diagnosis of the disease is not easy to make. Bacteria infecting the host plant are confined to the xylem, where they and their byproducts clog the vessels, leading to drought stress. Affected trees exhibit various symptoms, some of which could be confused with those caused by stress from drought, soil compaction or salt damage. The most obvious symptom of BLS is scorching starting at the margin and extending inward, toward the main veins. In some species, there is a "halo" of light tissue at the inner margin of the scorch. Unlike with oak wilt, scorched leaves tend to stay on the tree and trees may live many years with the disease. BLS symptoms recur annually and may be intensified by drought and other stresses, often leading to dieback and facilitating attack by other organisms, such as borers, anthracnose and *Armillaria*. The only practical methods for definitively diagnosing BLS are ELISA (Enzyme linked immune-sorbent assay) and PCR (Polymerase chain reaction). ELISA testing can be rapidly conducted by trained diagnosticians using kits that require little laboratory equipment. They are not, however, inexpensive. PCR, while more technically difficult, expensive and labor intensive, is about 100 times more sensitive than ELISA.

BLS is a difficult disease to manage. It affects a wide species range, including

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## Bacterial Leaf Scorch in the Midwest and Plains States continued from page 4

sycamore, mulberry, sugar maple, red maple, sweetgum, American elm and a number of oaks. In surveys coordinated by Dr. Adams at Michigan State, oaks in the red oak group have been among the species most commonly testing positive by PCR. Researchers in Dr. Adams' lab have also confirmed BLS in swamp white oak. Another factor making BLS management a challenge is that it is spread efficiently by insect vectors, primarily leafhoppers, that are mobile and unpredictable. Leafhoppers commonly arrive, en masse, carried on wind currents. Since they are xylem feeders, they are highly effective at transmitting the bacterium from infected to healthy trees. Therefore, controlling vectors with insecticides is unlikely to be effective in preventing infection. Trunk injections with antibiotics may reduce symptoms, but cannot eradicate the bacterium with current technology. Mulching and irrigation during drought may also reduce symptoms and slow the rate BLS-related decline.

If you see scorch symptoms on a tree and would like to determine whether they are caused by BLS, the best approach would be to contact the diagnostic lab at your State University and see if they have an arrangement for doing the testing themselves or sending the samples to another lab. Do not send individual samples directly to Dr. Adams at Michigan State. In some cases, if BLS is confirmed, it may be best to remove the infected tree to reduce the potential for hazard development and spread of the bacterium to other trees in the area. For more information on BLS and to see images showing symptoms, see the following web links.

- http://ipmnews.msu.edu/landscape/Landscape/tabid/92/articleType/ArticleView/articleId/354/MSU-seeking-statewide-volunteers-to-collect-leaf-scorch-samples-from-oaks-and-other-tree-species.aspx
- http://www.usna.usda.gov/Research/BacterialLeafScorch.html

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# Soil Test Summary for Urban Lawns and Garden Soils

Missouri homeowners use many different fertilization practices to manage their lawns and gardens. Most of the soil samples received by the MU Soil and Plant Testing labs from homeowners for lawn and gardens test very high in Phosphorus and Potassium. This happens as a result of applying fertilizers and organic nutrient amendments without testing the soil first, causing soils to be overloaded with certain nutrients resulting in imbalance in nutrient uptake and poor plant growth. Urban lawns and gardens have been identified as one of the major sources contributing to non-point source pollution due to over application of fertilizers. So, I decided to study the soil test summary for lawn and garden soils from urban areas to educate homeowners about the importance of soil testing and applying nutrients based on soil test recommendations. This will not only minimize environmental pollution but will save consumers money by the preventing over-application.

***Table 1. Number of Lawn, Garden, and Landscape Soil Samples Received by Urban Counties in Missouri – 2008***

| County | Sample Numbers |
|---|---|
| Boone | 292 |
| Cass | 91 |
| Clay | 132 |
| Cole | 224 |
| Franklin | 294 |
| Greene | 436 |
| Jackson | 294 |
| Jefferson | 323 |
| Platte | 99 |
| St. Charles | 400 |

The total number of samples received by selected urban counties in Missouri is provided in Table 1. This summary includes soil test data collected from Greater St. Louis (St. Louis, St. Charles, Jefferson and Franklin Counties) and Greater Kansas City (Clay, Cass, Jackson, and Platte) areas, Boone, Greene and Cole Counties.

Soil test results for samples received by the MU Soil Testing Lab from each urban county had been grouped for pH, soil test P and soil test K into 'very low,' 'low,' 'medium,' 'high' and 'very high' as per following guidelines. The University of Missouri soil testing albs measure salt pH (pHs- 1:1 0.01 M CaCl2), soil P by Bray P 1 extraction and soil K by ammonium acetate extraction. The water pH (pHw) values are in general 0.5 units higher than the salt pH (pHs).

- Soil pHs : Very low less than 5.0; low 5.0 to 5.8; medium 5.8 – 6.5; high 6.5 – 7.5; very high greater than 7.5;
- Soil P1: Very low less than 20 lb/ac; low 20 – 40 lb/ac; medium 41 – 60 lb/ac; high 61-120 lb/ac; very high greater than 120 lb/ac;
- Soil K: Very low less than 100 lb/ac; low 101 – 199 lb/ac; medium 200 – 259 lb/ac; high 260- 300 lb/ac; very high greater than 300 lb/ac;

The soil pHs, soil P and soil K distribution for samples received from greater St. Louis and greater Kansas City areas are presented in Fig. 1 and 2. The total number of home lawn and garden soil samples received from St. Louis and surrounding counties (St. Louis, St. Charles, Jefferson and Franklin) is 1260 and the Kansas City and surrounding counties (Cass, Jackson, Clay and Platte) is 616. Soil pHs was high (6.5 – 7.5) or very high (greater than 7.5; pHs values greater than 6.5 is equivalent to water pH values of 7 or higher) in majority of the

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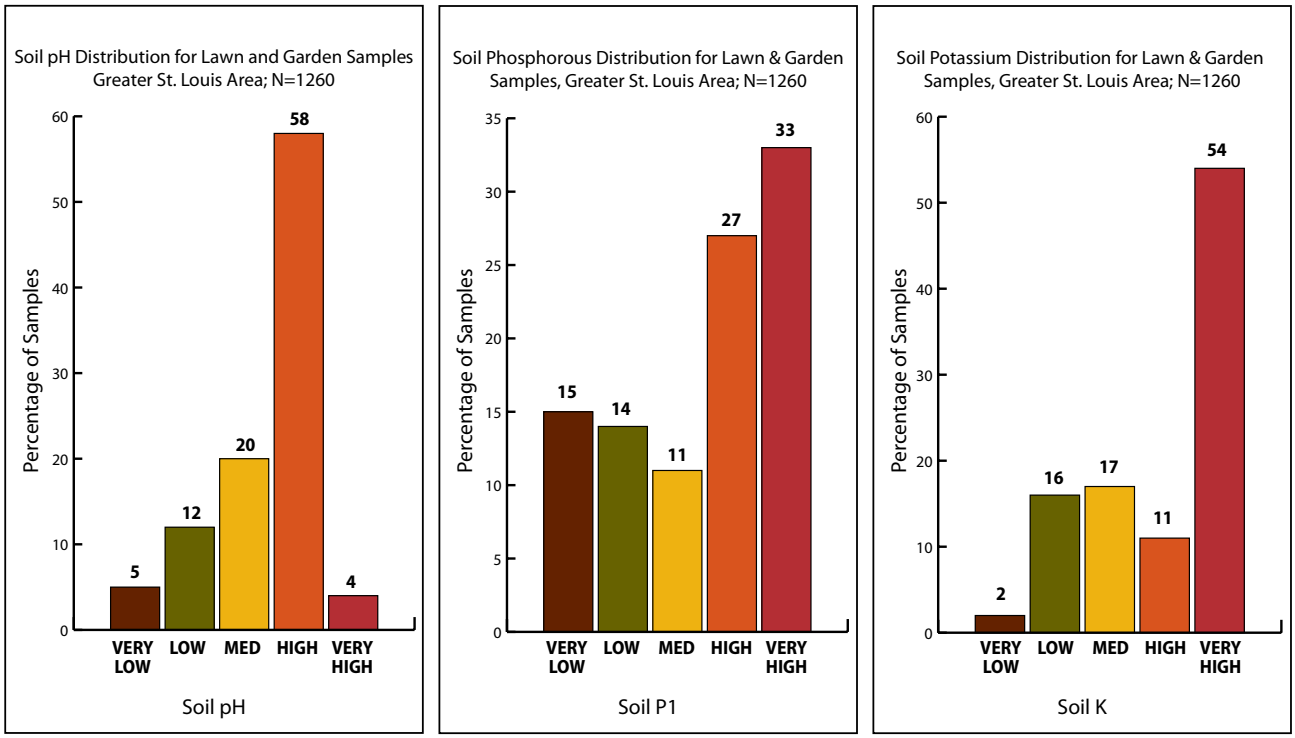
## Soil Test Summary for Urban Lawns and Garden Soils continued from page 5

samples tested from greater St. Louis area and greater Kansas City areas, 62% and 50% respectively. Likewise, the majority of samples tested had high (60- 120 lbs of P/ac) or very high levels (greater than 120 lbs of P/ac) of soil P levels (greater St. Louis area 60% and greater Kansas City area 67%). Similar trends were observed in soil test K levels for samples received from greater St. Louis and greater Kansas areas, 65 % and 89% percent of samples respectively. So based on this summary for lawn and garden soil-tests, the majority of homeowners have built their soil test P and K levels high and wouldn't need any additional fertilizer P and K for their lawns and gardens. These results indicate the importance of testing soils and applying

***Figure 1. Soil pHs, Bray P1 and K Distribution for Lawn and Garden Samples in the Greater St. Louis Area***




***Soil pHs***

***Very Low = <5.0***
***Low=5.0-5.8***
***Medium=5.8-6.5***
***High=6.5-7.5***
***Very High=>7.5***

***Soil Phosphorous (P1)***

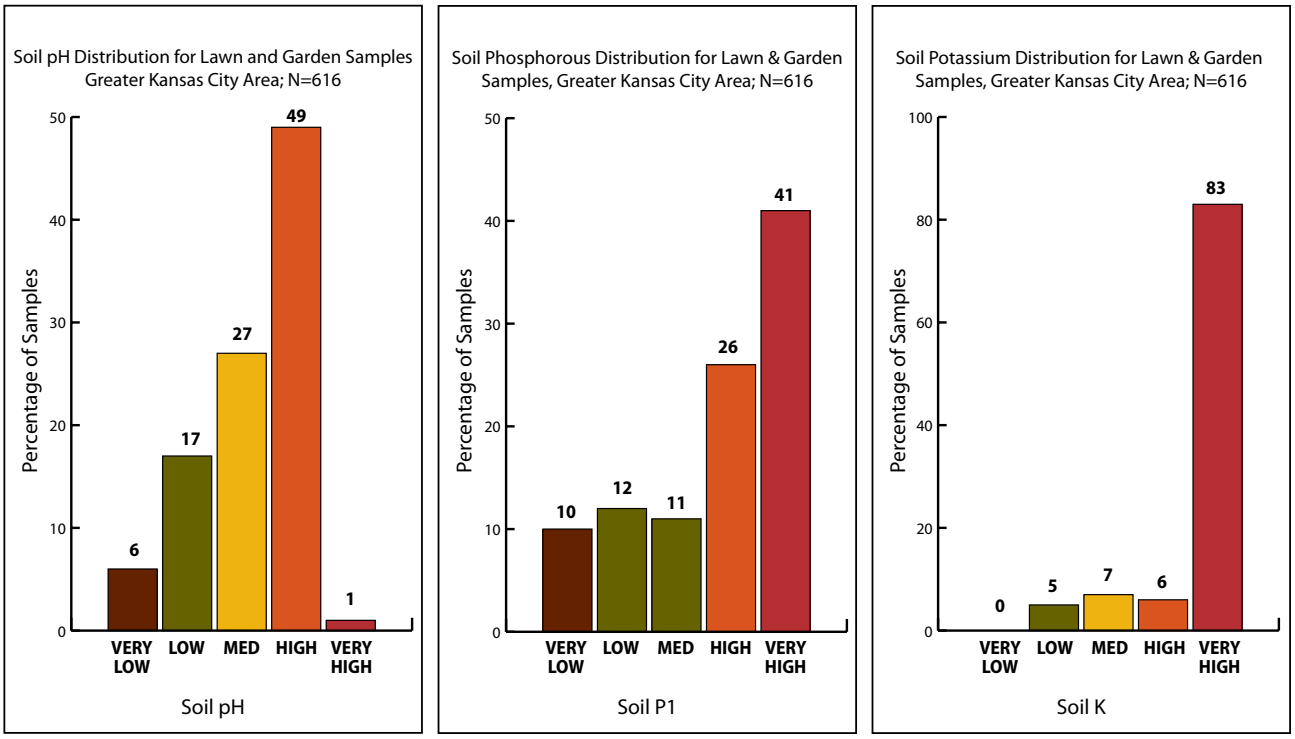
***Very Low = <20 lbs/acre***
***Low=20-40 lbs/acre***
***Medium=41-60 lbs/acre***
***High=60-120 lbs/acre***
***Very High=>120 lbs/acre***

***Soil Potassium (K)***

***Very Low = <100 lbs/acre***
***Low=100-199 lbs/acre***
***Medium=200-259 lbs/acre***
***High=260-300 lbs/acre***
***Very High=>300 lbs/acre***

***Continued on page 7***

***Figure 2. Soil pHs, Bray P1 and K Distribution for Lawn and Garden Samples in the Greater Kansas City Area***

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only the recommended levels of fertilizer N, P and K to soils. Very often we receive questions from homeowners who have built up their soil test levels so high and caused imbalance of nutrients resulting in poor performance in their gardens and lawns. Applying combined N-P-K fertilizers that are available in the lawn and garden stores without testing their soils results in a waste of money, and excess fertilizer N and P getting washed off to lakes and rivers and causing eutrophication and environmental pollution. This soil test summary report emphasizes the need for soil testing and adopting proper nutrient management practices to have healthy and productive lawns and gardens without polluting the environment. Once you have over-built the soil test P and K levels in excess by over applying mixed fertilizers without soil testing, it may take years to deplete the excess soil test levels down to optimum levels by growing plants.

The optimum soil pHs for most of the plants is 5.8 to 6.5 which translates to water pH values of 6.3 to 7.0 (pHs + 0.5 = pHw). Some acid loving plants like azaleas, rhododendrons and blue berries like acidic pHs. So it is important to test the soil and follow the recommendations to bring soil pHs levels to the optimum rates by applying lime or elemental sulfur.

The soil test pHs, soil P and soil K distribution for other urban counties such as Greene, Boone and Cole counties are presented in Fig. 3. The same trends in soil test pHs, soil P and K distribution in greater St. Louis and greater Kansas City areas were observed in these counties. This summary report emphasizes the importance of soil testing for lawns and gardens and adopting soil test based recommendations to apply fertilizer and other soil amendments. Taking these proactive steps encourages the growth of healthier lawns and gardens without wasting money and polluting the environment by over-application.

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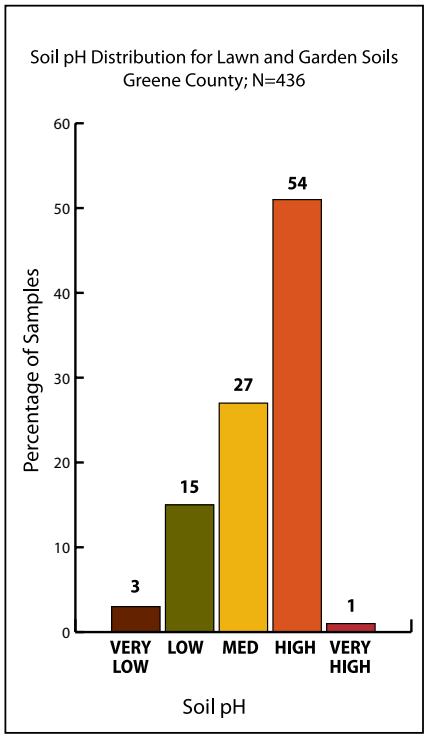
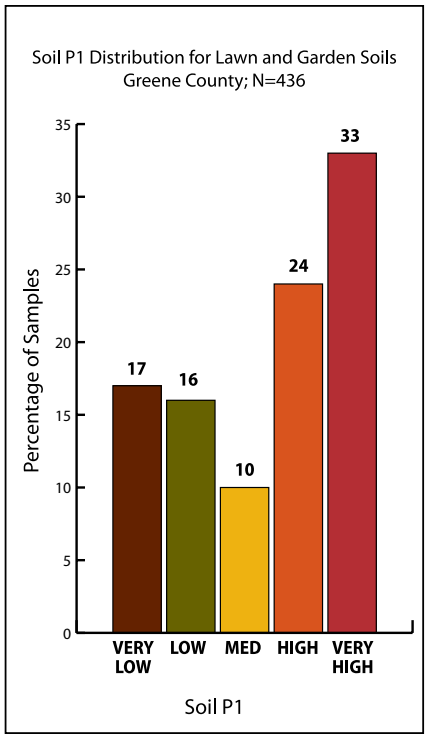
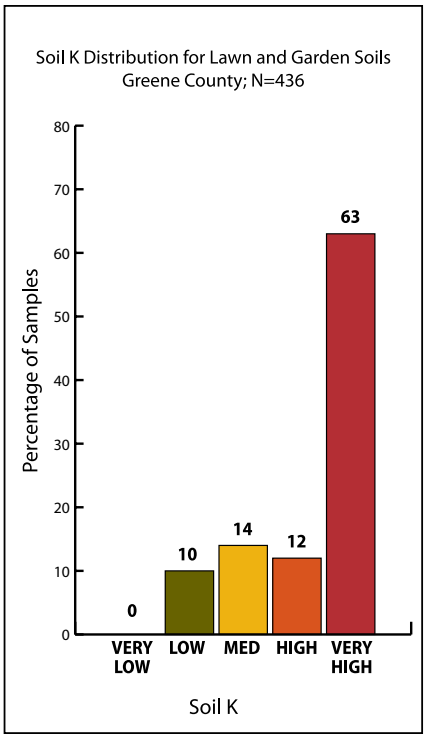
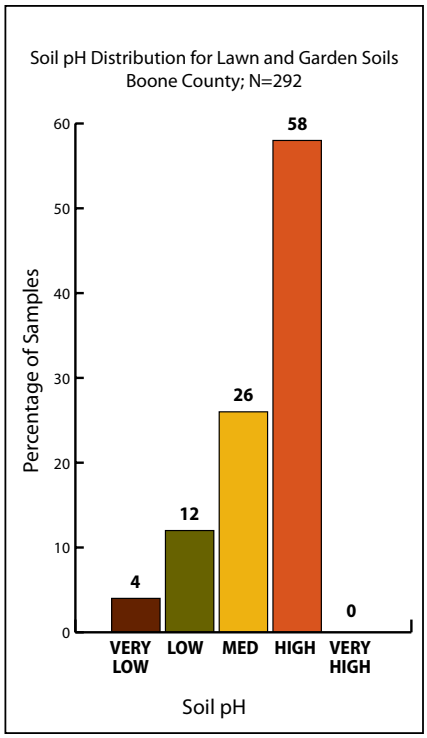
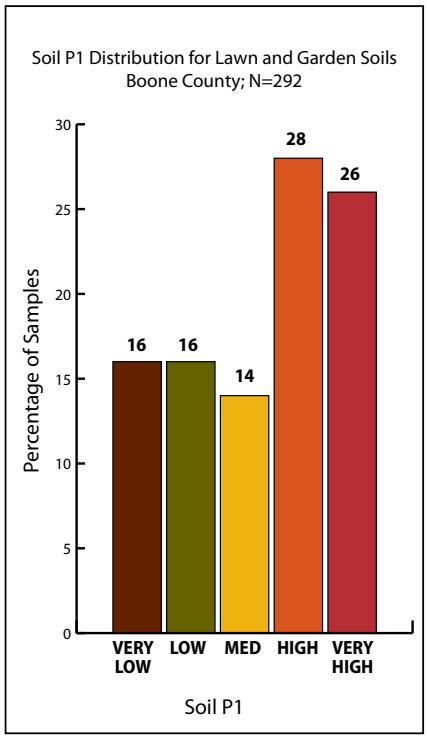
***Figure 3. Soil pHs, Bray P1 and K Distribution for Lawn and Garden Samples in Greene, Boone and Cole Counties***

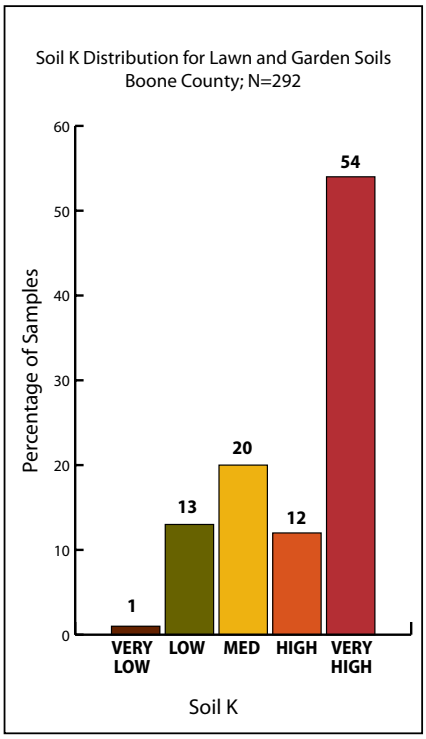
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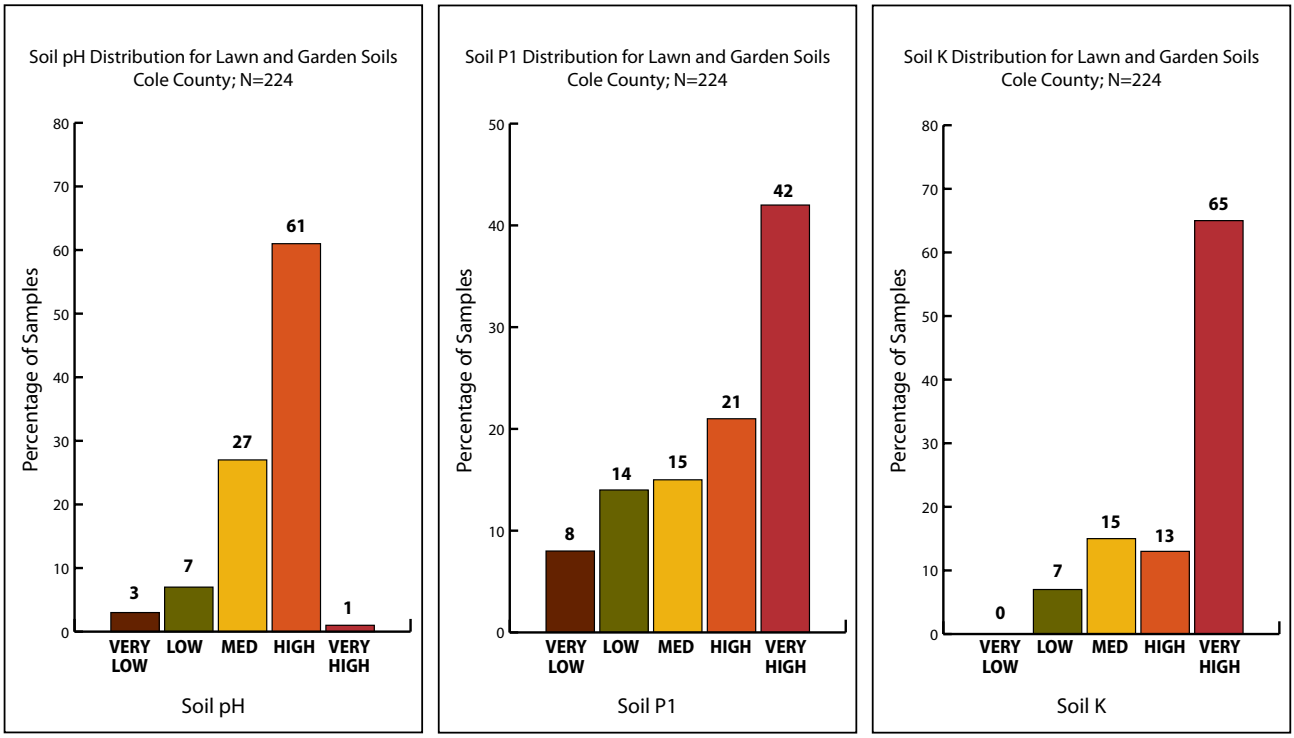
## Soil Test Summary for Urban Lawns and Garden Soils continued from page 8

***Figure 3. (continued)***

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## African Violet: Nature's Cure for Winter Blahs continued from page 1

kept warm. Maintain night temperatures between 65 and 70 degrees Fahrenheit; day temperatures should be 10 degrees warmer. Do not expose plants to temperatures below 60 or above 80 degrees Fahrenheit.

Soilless growing media produce plants with good growth and flowering although some violet fanciers prefer using soil rich in humus. If soil is used it should be sterilized to reduce the risk of disease infestation. Soilless mixes are considered to be biologically inert and do not need to be sterilized.

Keep plants uniformly moist but not wet since they are easily killed by excess moisture. Wick watering using a candle wick or nylon twine extending from the growing medium via a hole in the bottom of the pot to a water/nutrient reservoir below the pot works well. Plastic tubs used to hold margarine can be used for the latter. Leaf spotting can be a problem when water 10 degrees above or below the leaf temperature contacts the leaves. Therefore, if overhead watering is practiced, use water that is room temperature and try to keep it off the leaves.

Also, relative humidity is important and most homes have low humidity, especially during winter months. To increase the relative humidity around plants, place them on shallow trays of gravel containing water. Home humidifiers also work well..

If located properly and watered regularly, African violets need little other care besides occasional fertilization. Use either special African violet fertilizers or a houseplant fertilizer high in phosphorus. A very dilute fertilizer solution at each watering keeps growth constant and eliminates any chances of over fertilization. Pale green leaf color may indicate too much sunlight or low fertility. Do not use water softened by a system using salt in the process.

Mealybug is the most troublesome pest of African violets. New plants should be quarantined several weeks before introducing them to your collection. If mealybugs appear, swabbing them with isopropyl (rubbing) alcohol using a cotton swab can be an effective means of control unless populations are excessive.

African violets seldom need pots larger than 4 inches in diameter. The danger of overwatering and development of root and crown rots increases if pots are too big. Old plants sometimes develop long woody stems. The tips of these plants may be cut off and rooted to form new, more compact plants. However, plants developed from leaf cuttings are generally more vigorous and bloom more abundantly.

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# February Gardening Calendar

## Ornamentals

- **Weeks 1–4:** Winter aconite (Eranthis sp.) and snowdrops (Galanthus sp.) are hardy bulbs for shady gardens that frequently push up through snow to bloom now.
- **Weeks 1–4:** Water evergreens if the soil is dry and unfrozen.
- **Weeks 1–4:** Inspect summer bulbs in storage to be sure none are drying out. Discard any that show signs of rot.
- **Weeks 1–4:** Enjoy the fragrant blooms of the Ozark Witch Hazel flowering in shrub borders or wooded areas on warm sunny days.
- **Weeks 1–4:** Take geranium cuttings now. Keep the foliage dry to avoid leaf and stem diseases.
- **Weeks 2–4:** Sow seeds of larkspur, sweet peas, Shirley poppies and snapdragons where they are to grow outdoors now. To bloom best, these plants must sprout and begin growth well before warm weather arrives.
- **Weeks 2–3:** Seeds of slow–growing annuals like ageratum, verbena, petunias, geraniums, coleus, impatiens and salvia may be started indoors now.
- **Week 4:** Dormant sprays can be applied to ornamental trees and shrubs now. Do this on a mild day while temperatures are above freezing.
- **Week 4:** Start tuberous begonias indoors now. "Non–stop" varieties perform well in this climate.

## Vegetables

- **Weeks 1–4:** Season extending devices such as cold frames, hot beds, cloches and floating row covers will allow for an early start to the growing season.
- **Weeks 1–4:** Start onion seeds indoors now.
- **Weeks 1–4:** Run a germination test on seeds stored from previous years to see if they will still sprout.
- **Weeks 1–4:** Don't work garden soils if they are wet. Squeeze a handful of soil. It should form a ball that will crumble easily. If it is sticky, allow the soil to dry further before tilling or spading.
- **Weeks 2–4:** Sow celery and and celeriac seeds indoors now.
- **Weeks 3–4:** Sow seeds of broccoli, cauliflower, Brussels sprouts and cabbage indoors now for transplanting into the garden later this spring.
- **Weeks 3–4:** If soil conditions allow, take a chance sowing peas, lettuce, spinach and radish. If the weather obliges, you will be rewarded with extra early harvests.

## Fruits

- **Weeks 1–4:** Check fruit trees for tent caterpillar egg masses These are laid on twigs in tight clusters that resemble an oblong brown lump of gum wrapped around the stem. Prune off these twigs or destroy the eggs by scratching off the clusters with your thumbnail.
- **Weeks 1–4:** Inspect fruit trees for tent caterpillar egg masses. Eggs appear as dark brown or gray collars that encircle small twigs. Destroy by pruning or scratching off with your thumbnail.
- **Weeks 1–2:** Collect scion wood now for grafting of fruit trees later in spring. Wrap bundled scions with plastic and store them in the refrigerator.
- **Weeks 3–4:** Grapes and bramble fruits may be pruned now.
- **Weeks 3–4:** Begin pruning fruit trees. Start with apples and pears first. Peaches and nectarines should be pruned just before they bloom.
- **Weeks 3–4:** When pruning diseased branches, sterilize tools with a one part bleach, nine parts water solution in between cuts. Dry your tools at day's end and rub them lightly with oil to prevent rusting.
- **Weeks 3–4:** Established fruit trees can be fertilized once frost leaves the ground. Use about one–half pound of 12–12–12 per tree, per year of age, up to a maximum of 10 pounds fertilizer per tree. Broadcast fertilizers over the root zone staying at least one foot from the tree trunk.