Missouri Environment & Garden

December 2008 Volume 14, Number 12

Caring for Your Christmas Tree Through the Holidays

Each year, it is estimated that more than 30 million live Christmas trees are used in households across the United States. When using a live tree for the holidays, there are some simple steps that will go a long way in providing a safer and longer lasting tree. When choosing a tree, important things to look for are shape, color, and needle retention. If the tree is fresh, the needles should be pliable and bend, not snapping off when bent. When shaking or bouncing the tree, needles should be well attached with very few falling off. It is normal for the tree to shed some needles, but too many may be a sign the tree is not fresh. A healthy tree should have good color as well, not yellowed or wilting. When the tree was cut and the conditions of storage and transportation before arriving at the lot will determine the length of time in which the needles will hold on after cutting. In general, pines will hold their needles the longest, followed by firs, and lastly spruces. The warm weather this season has made it difficult to provide fresh trees as newly cut trees need cool storage. Use added caution this season when selecting your tree off the lot.

Once you bring your tree home, water is the single most important factor in determining the length of time your tree will stay fresh indoors. If the tree is to be stored longer than a day, cut off an inch of the tree base and place in a bucket of water. This allows the tree to immediately uptake water. When you bring the tree into the home, cut off an inch of the base and immediately place the tree in a stand that holds ample water. Always keep the tree well-supplied with water and check the water level several times per day. A freshly cut tree will rapidly absorb water during the first few days indoors. Never let the water level fall below the base of the tree as the cut end will seal over and the tree will not be able to uptake any more water. If the tree does run out of water, re-cut the base to expose fresh wood. To further guard against moisture loss keep the tree away from air ducts, sunny windows, and heat-producing appliances such as fireplaces and radiators.

Christmas trees can be sprayed with fire retardant to prevent flash fires. The best method for fire proofing a tree is to keep it well-supplied with water. However, there are commercial fire retardants treatments that can be sprayed on trees to reduce flammability. Another caution is to use only UL-approved lights and non-flammable decorations on your tree. Keep trees away from heat sources and flammable items such as candles. Never leave home or go to bed with the Christmas tree lights on.

There are many wonderful things you can do with your Christmas tree after the holidays are over. I place mine in the backyard under the bird feeders, and the birds come in masses to hang out on the branches of the dead tree. The tree can be ground for mulch to place in flowerbeds or gardens. Christmas trees make great fish attractors by weighting the base of the tree and sinking it in a pond. Most urban areas have a curbside recycling program for your Christmas trees. Check your local newspaper for dates of the curbside pick-up.

Mary K. Kroening,
Horticulture Specialist
MU Division of Plant Sciences
Kroeningm@missouri.edu

In This Issue

University of Missouri Plant Diagnostic Report – 2008

The Plant Diagnostic Clinic was established in 1965 and handles samples submitted for disease, insect, and weed identifications, as well as management recommendations. The clinic supports county extension specialists, but in recent years 65-75% of samples have been received 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 dependent on significant sample volume for economic reasons.

In 2008, we have had 575 samples, approximately the same number of sample submissions as 2007. Most samples were submitted through the mail while some were personally delivered to the clinic or submitted digitally by e-mail. Samples were submitted from 79 Missouri counties. Approximately 80% of the samples were received between May and September.

In 2008, horticultural crops including herbaceous and woody ornamentals, turf, fruits and vegetables made up 69% of samples submitted to the clinic (fig. 1). The most commonly submitted horticultural plant samples include oak species, tomatoes, maples, mixed cool season turf species, and pine species respectively. We had an increase in biotic (living) disease issues this year, perhaps due to wet weather, resulting in 61% of our samples with biotic disease issues (fig. 2). Sample submissions to the plant diagnostic clinic have often been examined by experienced horticulturists, and consequently do not necessarily represent the most common plant problems occurring in the state. Samples diagnosed by the diagnostic clinic are described in Missouri Environment and Garden updates during the growing season, however significant numbers of the following samples were received and are also described below:

Many of the tree problems were probably related to wet conditions this year. Many leaf spot samples were submitted, including anthracnose on a variety of species. Tubakia leaf spot was frequently submitted on several different oak species. Needle diseases were also submitted, especially brown spot needle blight on Scots pine in Christmas tree plantations, Dothistroma needle blight on Austrian pine, Stigmina and Rhizosphaera needlecast on spruces. A few pine tip moth and pine wilt nematode samples were also submitted from Scots pine. While many of the yew and arborvitae samples had root rots and environmental injuries, sometimes Pestalotiopsis was detected in the dead areas. In addition two yew samples with some branch dieback had the fungus *Cryptocline taxicola*, recently reported in Missouri. We have continued to receive white pine samples with "white pine decline" that display general wilting, chlorosis, bark beetle injury, and death resulting from root problems and environmental stress (http://www.ppdl.purdue.edu/ppdl/weeklypics/8-16-04.html). Many of the oak sample submissions were requests for oak wilt testing. Several were positive including four in Boone, two in St. Louis, and one each in Audrain, Clay, Johnson, and Pike Counties. Several white oak samples had jumping oak gall infestations.

On fruit crops, cedar apple rust and peach leaf curl were frequently submitted as well as fruit rots including black rot on grape, brown rot on stone fruits, and various strawberry fruit rots (especially leather rot and Rhizoctonia).

Vegetable sample submissions had 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 pith necrosis on tomato. We had a few potato and tomato samples with southern blight. We received a large number of tomato samples this year. Several leaf mold (*Fulvia fulva*) were submitted from greenhouse and high tunnel plantings. Unlike last year, we did not receive samples with this disease from backyard gardeners. Also common were chemical injuries, Septoria leaf spot, and early blight.

This year a majority of our turf submissions were cool season grasses from homeowner lawns, and included a variety of abiotic problems (soil fertility, compacted soils, thatch etc), although brown patch was frequently found on fescue samples, and anthracnose basal rot was found on some bentgrass samples. In addition, yellow patch and Pythium blight were detected on bentgrass, rust diseases were found on a few different turf species, summer patch was detected on Kentucky bluegrass, large patch and chinch bug infestations were detected on zoysiagrass.

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.

Simeon Wright, Coordinator
Division of Plant Sciences
WrightSi@missouri.edu

Continued on page 97

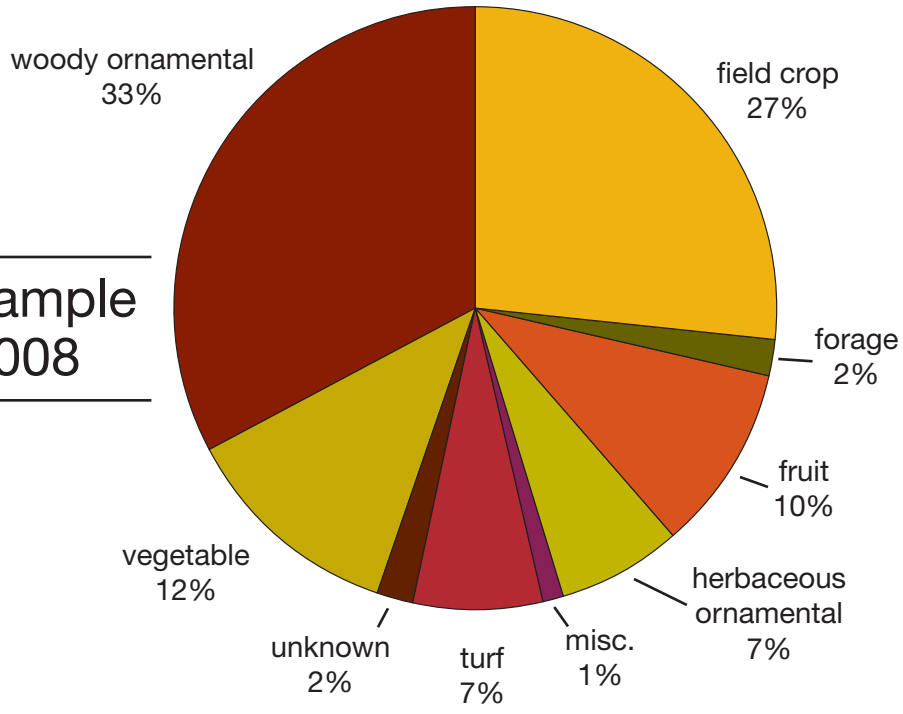

Figure 1. Plant sample submissions in 2008

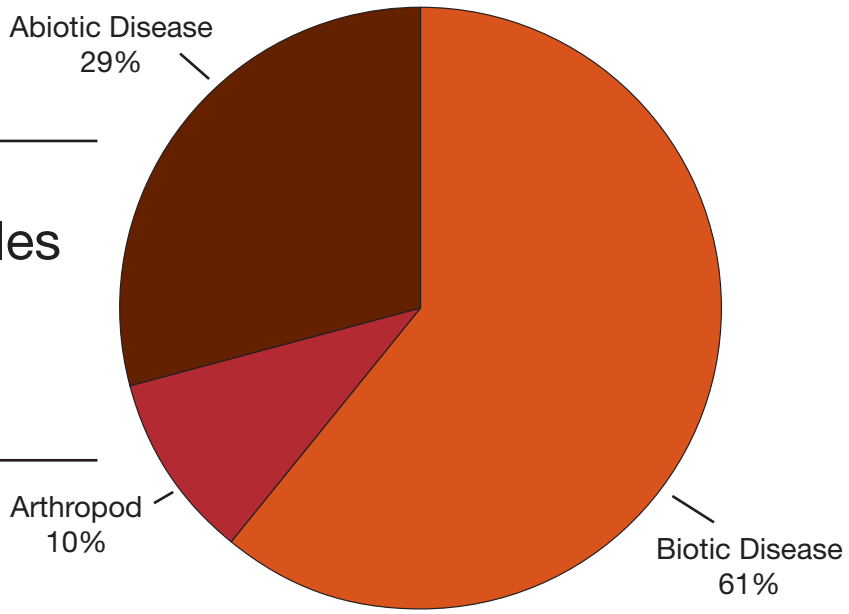

Figure 2. Primary diagnosis for samples submitted for plant problem analysis in 2008

Plants Can Improve Indoor Air Quality

In the summer, I greatly enjoy filling my outdoor patios with huge tropical plants such as banana, elephant ears, *Dracaena* and *Ficus* trees. Then I always grumble as I try to find space indoors in which I can over winter these plants. In reality, bringing these plants indoors may provide a way to improve the air quality in the rooms in which they are located. Several years ago, NASA studies found that plants can be very useful in absorbing harmful pollutants, and hence cleaning the air inside homes and buildings. In an ongoing study, NASA research found that living plants were so efficient at absorbing contaminants in the air that some of these plants were launched into space as part of the biological life support system aboard orbiting space stations. NASA research has consistently shown that living, green and flowering plants can remove several toxic chemicals from the air in building interiors, including benzene, which is an irritant to eyes and skin, formaldehyde, which is also found in almost all indoor environments, and trichloroethylene. When plants undergo photosynthesis, they take in carbon dioxide from the atmosphere and release oxygen. During this process, they also take in air pollutants at the same time as taking in the carbon dioxide. The roots and plant tissue then degrade the pollutant. Studies since have also found that the potting soil, and microorganisms in the potting soil, also play a role in removing pollutants from the air. Years ago, houses and office buildings were not sealed as tightly, and indoor air quality was not as contaminated because the air was replaced often enough by leaky walls, windows, and doors. With current construction, buildings and homes are much better insulated and sealed, and as a result, air might linger for hours allowing air pollutants to accumulate.

Plants that were listed as particularly good at absorbing air contaminants were:

- English Ivy (*Hedera helix*)
- Spider plant (*Chlorophytum comosum*)
- Golden pothos or Devil's ivy (*Scindapsus aures* or *Epipremnum aureum*)
- Peace lily (*Spathiphyllum* 'Mauna Loa')
- Chinese evergreen (*Aglaonema modestum*)
- Bamboo or reed plant (*Chamaedorea sefritzii*)
- Snake plant or mother-in-law's tongue (*Sansevieria trifasciata* 'Laurentii')
- Heartleaf philodendron (*Philodendron oxycardium,* syn. *Philodendron cordatum*)
- Selloum philodendron (*Philodendron bipinnatifidum,* syn. *Philodendron selloum*)
- Elephant ear philodendron (*Philodendron domesticum*)
- Red-edged dracaena (*Dracaena marginata*)
- Cornstalk dracaena (*Dracaena fragans* 'Massangeana')
- Janet Craig dracaena (*Dracaena deremensis* 'Janet Craig')
- Warneck dracaena (*Dracaena deremensis* 'Warneckii')
- Weeping Fig (*Ficus benjamina*)
- Gerbera Daisy or Barberton daisy (*Gerbera jamesonii*)
- Pot Mum or Florist's Chrysanthemum (*Chrysantheium morifolium*)
- Rubber Plant (*Ficus elastica*)

Information for this article was retrieved from http://en.wikipedia.org/wiki/List_of_air_filtering_plants.

Mary K. Kroening,
Horticulture Specialist
MU Division of Plant Sciences
Kroeningm@missouri.edu

Holiday Cacti for Winter Color

A healthy plant in full bloom is a great gift for the special gardener on your holiday shopping list. While the poinsettia remains the most popular blooming plant for the holiday season, one of the most beautiful blooms to be found during the winter belongs to the Christmas (holiday) cactus. The true identity of the latter is a source of much confusion.

Christmas cactus (*Schlumbergera bridgesii*) is often mistaken for the Thanksgiving cactus (*Schlumbergera truncata*) because of their close proximity of their bloom dates. As a matter-of-fact, most of the Christmas cacti sold each year actually are Thanksgiving cacti mislabeled. To make matters even more confusing, many cultivars of Christmas cactus on the market today are hybrids between these to species. Perhaps it would be best that we refer to the two species and their hybrids collectively as 'holiday cacti'. For the sake of those who want to know how the two species can be identified from one another, the Thanksgiving cactus bears leaf segments (phylloclades) that have serrated edges with 2-4 claw-like appendages. The true Christmas cactus has phylloclades with dentate margins.

Holiday cacti are native to a small region north of Rio de Janeiro, Brazil where they experience a "wet season" from December until March and a "dry season" for the remaining months. Holiday cacti are epiphytes in nature and often root into decaying debris trapped among tree branches or in rocky crevasses in shady areas on the ground. Although they are true cacti, they are tropical cacti and not quite as drought resistant as their name might imply. This is important to remember when considering the cultural requirements of this plant.

While holiday cacti can tolerate low light, they perform best in bright indirect light in the home. Brighter light is beneficial during the winter but full sun during the summer months can burn the plant and result in pale-looking plants. If plants are moved outside during the summer, be sure to keep them in a shady or semi-shady location. The ideal temperature for holiday cacti is between 70 and 80 for it growing season which is from April to September in the northern hemisphere.

Proper watering is vital for success with holiday cacti. Like most cacti, holiday cacti will not tolerate "wet feet". Holiday cacti are much more tolerant of under-watering than over-watering and should be watered only when the growing medium is dry to the touch. If a saucer is placed under the pot to collect drainage, but sure to empty it and not allow the excess to be wicked back in the pot over several days. Failure to do so will result in a soggy root environment which is an open invitation to root rot. Reduce watering from fall through spring and only fertilize plants during their growth period of early spring through late summer. When fertilizer is called for apply a regular fertilizer at one-quarter strength or a houseplant fertilizer according to label directions.

Holiday cacti should be kept slightly potbound to induce prolific flowering. When repotting becomes necessary (about every three years), the growing medium used should be very porous and well-drained. Commercially available peat-lite mixes formulated for epiphytes are good choices. Regular peat-lite mixes can be made into epiphytic mixes by incorporating additional amounts of perlite or sterile sharp sand to increase porosity.

Reblooming holiday cacti can be a bit challenging. Holiday cacti are short-day (long night) plants but the response to daylength is modified by temperature. Indeed, flowering will occur regardless of daylength under cool night conditions (50-55^{o} F). Most prolific flowering occurs when plants are exposed to short days with at least 13 hours of darkness each night and cool night temperatures. Reducing the amount of water to slightly stress the plant at this time will also aid in the flowering process. Subjecting holiday cacti to short days, cool nights and dry conditions in mid-October will cause plants to be in full bloom for the holiday season.

Holiday cacti commonly drop unopened flower buds when suddenly stressed. This can be the result of a sudden change in temperature, light or other environmental factors such as excessive drying of the growing medium. Poor flowering is often due to stray light interrupting the required long, uninterrupted period of darkness during short-day treatment. Interior lights in the home, street lights or even car lights can disrupt the required dark period and cause disappointing flowering. Additionally, holiday cacti are very prone to root rot. This can be prevented by avoiding excess watering and maintain strict sanitation when culturing the plant. The most common insect pests include mealybug and scale which are most easily dealt with by physically removing them from the plant.

Given proper care, holiday cacti often outlive the caretaker and provide years of brilliant color around Christmas. The small amount of effort required by these plants is well worth it when one considers the reward of seeing an "heirloom" plant bloom year after year.

David Trinklein, Associate Professor
MU Division of Plant Sciences
TrinkleinD@missouri.edu

It's a Wrap!

Tree wraps and guards are often sold for use on young trees. These materials provide protection from harsh environmental conditions, such as "southwest injury". This type of injury, also sometimes called "trunk scald", occurs on the lower portion of the trunk during winter. Sunlight (at a low angle in the winter) elevates trunk tissue temperatures during the day but they rapidly cool during the evening when the air temperature drops. Trunk cracking or splitting on the south or southwest side of the tree are common symptoms as well as sunken areas in the bark. Often, insects like flatheaded appletree borer take advantage of southwest injury to gain access to the trunk, where they intensify the injury. Tree wraps on ornamental trees with thin bark, such as red maple and ornamental cherry, may protect trunks during the winter months. Alternatively, white latex paint may be applied to the lower portion of trunks to protect from southwest injury. This type of treatment is commonly used on newly-planted peach trees to protect the trunks.

Wraps composed of waterproof crinkled kraft paper or vinyl tree guards are commonly available. Tree wraps may be applied before the first hard freeze, which occurs in late November or early December in central Missouri. When you wrap a trunk, begin at the soil line and spiral the paper around the trunk up to the first branches. Overlap the edges of each layer of the material to provide adequate trunk protection. Wraps should be removed in early April.

Vinyl guards generally have a higher initial cost, but they can be re-used for several years. They also provide protection from southwest injury and should be used as described for wraps. Guards and wraps should always be removed in early spring. While these materials can protect the trunk from lawn trimmers and mowers, they also provide a protected environment for insects and disease organisms. Moisture can collect underneath the guards during the evening and prolong the wetting period, which favors the development of trunk diseases. Also, wraps prevent the penetration of spray materials and guards limit coverage of pest control products. Dogwood borers and lesser peach tree borers can cause significant trunk damage when tree guards are left on during the growing season. Additionally, materials left on too long can restrict tree growth. While wraps and guards are inexpensive and easy to use, they can detrimental to long-term tree health when not removed after a few months. Often, ornamental trees have abnormally thin bark due to bark shading in the nursery fields where they are grown. If landscape trees are planted in spring it is a good idea to leave the trunk unwrapped until fall to allow the bark to thicken. Then, remove the wrap when growth begins the following spring.

Michele Warmund & Chris Starbuck
MU Division of Plant Sciences
WarmundM@missouri.edu
StarbuckC@missouri.edu

After Bloom Care for Indoor Bulbs

It is a very common practice to "force" bulbs to bloom indoors during the winter months. The most common are daffodils, hyacinths, tulips, and amaryllis. Many of you may purchase bulbs that are almost ready to bloom from the grocery stores or nursery/florist retail shops, or you may have purchased and forced your own bulbs. But what do you do with the bulbs once they are done blooming?

Amaryllis are perhaps the most showy of the indoor bulbs, and with minimal care,will repeat annually for many years of lovely blossoms. After blooming, amaryllis flowers should be cut off to prevent seed formation. The foliage should then be placed in a sunny, warm location and treated as a houseplant. Once the danger of frost has passed, place the plant outdoors in a location in the garden that receives minimal sunlight. Keep the plant fertilized at regular intervals throughout the summer months to allow the nutrients needed for blooming to build up. Amaryllis should be brought back indoors before the first danger of frost occurs. Let the foliage dry out by withholding water and storing in a cool, dark location. Once the foliage has dried down completely, the bulb usually will need to be kept dormant for eight weeks before it will re-bloom. If the bulb gets too large for the pot, simply repot into a slightly larger container. If you don't repot, it is good to top dress with fresh potting soil. If plantlets develop alongside the original bulb, you can gently separate these and repot the plantlets. They can also be left to bloom alongside the original bulb, resulting in several amaryllis blooming at one time.

Other bulbs such as daffodils, tulips, hyacinths, and crocus are typically planted outdoors once the indoor blooms have faded. Outdoor planting of forced after they have faded is never a sure thing. Forced bulbs that have bloomed indoors have been through an exhausting process and may or may not re-bloom in the garden. Once they have finished flowering, plant them out into the garden and provide with water and a slow release bulb food. Wait until the leaves brown and die back before removing the foliage. Daffodils and crocus typically do well naturalizing into the garden after blooming indoors. Tulips do not readily come back even when originally planted in the garden, and thus generally not worth the trouble to re-plant outdoors. These should be enjoyed indoors during bloom and then tossed out or composted. Hyacinths may come back in the garden, usually not as robust in subsequent years.

(Reference for Amaryllis: University of Minnesota Extension Service. For more information, visit their website at http://www.extension.umn.edu/distribution/horticulture/DG1116.html)

Mary K. Kroening,
Horticulture Specialist
MU Division of Plant Sciences
Kroeningm@missouri.edu

It's time to *renew* your Missouri Environment & Garden Newsletter subscription.

To renew your subscription, just fill out the form below and mail along with your $20 subscription fee to:

Plant Protection Programs
Missouri Environment & Garden
108 Waters Hall
Columbia, MO 65211

Missouri Environment & Garden - *2009 Renewal Form*

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____

ZIP CODE: _____

QUESTIONS? E-MAIL *durborawj@missouri.edu* OR CALL (573) 884-6361

Subscribe to Missouri Environment & Garden online at ppp.missouri.edu

January Gardening Calendar

Houseplants

- **Weeks 1–4:** To clean heavily encrusted clay pots, scrub them with a steel wool pad after they have soaked overnight in a solution consisting of one gallon of water, and one cup each of white vinegar and household beach.
- **Weeks 1–4:** Some plants are sensitive to the fluorine and chlorine in tap water. Water containers should stand overnight to allow these gases to dissipate before using on plants.
- **Weeks 1–4:** Wash the dust off of house plant leaves on a regular basis. This allows the leaves to gather light more efficiently and will result in better growth.
- **Weeks 1–4:** Set the pots of humidity–loving house plants on trays filled with pebbles and water. Pots should sit on the pebbles, not in the water.
- **Weeks 1–4:** Allow tap water to warm to room temperature before using on houseplants.
- **Weeks 1–4:** Fluffy, white mealy bugs on house plants are easily killed by touching them with a cotton swab soaked in rubbing alcohol.
- **Weeks 1–4:** Insecticidal soap sprays can be safely applied to most house plants for the control of many insect pests.
- **Weeks 1–2:** Quarantine new gift plants to be sure they do not harbor any insect pests.
- **Weeks 2–4:** Amaryllis aftercare: Remove spent flower after blooming. Set the plant in a bright sunny window to allow the leaves to fully develop. Keep the soil evenly moist, not soggy. Fertilize occasionally with a general purpose houseplant formulation.

Ornamentals

- **Weeks 1–4:** Gently brush off heavy snows from tree and shrub branches.
- **Weeks 1–4:** Limbs damaged by ice or snow should be pruned off promptly to prevent bark from tearing.
- **Weeks 1–4:** Check stored summer bulbs such as dahlias, cannas and gladiolus to be sure they are not rotting or drying out.
- **Weeks 1–4:** To reduce injury, allow ice to melt naturally from plants. Attempting to remove ice may damage plants further.
- **Weeks 1–4:** Use sand, bird seed, sawdust or vermiculite to gain traction on icy paths. Avoid salt or ice melters as these may injure plants.
- **Weeks 1–4:** Make an inventory of the plants in your home landscape. Note their location and past performance. Plan changes on paper now.
- **Weeks 2–3:** Sow pansy seeds indoors now.

Miscellaneous

- **Weeks 1–4:** Avoid foot traffic on frozen lawns as this may injure turf grasses.
- **Weeks 1–4:** Make a resolution to keep records of your garden this year.
- **Weeks 1–4:** Store wood ashes in sealed, fireproof containers. Apply a dusting around lilacs, baby's breath, asters, lilies and roses in spring. Do not apply to acid–loving plants. Excess ashes may be composted.
- **Weeks 1–4:** Check all fruit trees for evidence of rodent injury to bark. Use baits or traps where necessary.
- **Weeks 1–4:** Cakes of suet hung in trees will attract insect–hunting woodpeckers to your garden.
- **Weeks 1–4:** Brightly colored paints applied to the handles of tools will make them easier to locate in the garden.
- **Weeks 1–2:** Seed and nursery catalogs arrive. While reviewing garden catalogs, look for plants with improved insect, disease and drought–tolerance.
- **Weeks 1–2:** Old Christmas trees can be recycled outdoors as a feeding station for birds. String garlands of peanuts, popcorn, cranberries, fruits and suet through their boughs.
- **Week 1:** If you didn't get your bulbs planted before the ground froze, plant them immediately in individual peat pots and place the pots in flats. Set them outside where it is cold and bury the bulbs under thick blankets of leaves. Transplant them into the garden any time weather permits.