

Spring '99

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Establishing New Trees

By Gary Johnson

Whether the reason for planting a new tree is to recover from losses courtesy of 1998's storm season, oak wilt, construction damage or simply the desire to plant a tree, tree health only begins with best planting practices (Johnson, Ash, 1998) and a high-quality tree. Trees, like children, require a lifetime of care—sometimes intensive maintenance as with urban trees, sometimes just occasional guidance and attention. But no matter what the site and the tree may be like, the first several years—the formative years—are the most important for developing worthy and healthy trees for our urban forests. Consider these myths:



Best planting practices begin with digging an ample hole (above), contrasted here with the old way . . . the smallest possible hole (left).

GARY JOHNSON

■ “It made it through the guarantee period, so it should be just fine.”

Just about anyone can get a tree to survive for a growing season or a year, so don't be lulled into a false sense of security and complacency once the tree has survived the normal, one-year guarantee that most retailers provide. Establishing healthy trees is a 15-20 year commitment beyond that survival guarantee period. All transplanted trees must first live through a period of transplant shock, whether they've been dug and transplanted from a field nursery or transplanted from a container to the landscape.

■ “Trees seem to survive just fine in forests...why should I meddle with nature?”

Under normal circumstances, the transplant shock period is approximately one year for each inch of stem caliper. Therefore, a three-inch caliper tree will need at least three years in the

With the extensive losses of trees in many Minnesota communities over the past year, spring planting and Arbor Day activities may take on new importance in many parts of the state this season. With a focus on planting, this *Advocate* can be a handy guide to experienced tree planters as well as novices as we work together to create and rebuild our community forests.

The Minnesota Shade Tree Advisory Committee's mission is to advance Minnesota's commitment to the health, care and future of all community forests.

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Tree Buds

MnSTAC is completing its 25th year of “speaking for the trees.” Since inception our goal has been to be a statewide organization. Distance has kept us from having many members outside the Twin City Metro area. This newsletter helps to bridge the distance with information.

Our structure calls for regional STACs. As of today, we have three:

- **HA STAC**—Headwaters Agassiz
- **WC STAC**—West Central
- **SE STAC**—Southeast.

A fourth is in the formative stage in northeastern Minnesota. These groups help sponsor Tree City Award events, tours and workshops. The Northwest Urban Forestry Workshop at Crookston, now in its 15th year, is an example.

Opportunities abound!!

You can:

- ✓ be part of one of these regional committees
- ✓ help form one in your region if none exists
- ✓ recruit neighbors and colleagues and serve on or form a “tree board” in your community
- ✓ serve on a MnSTAC committee in your area of interest.

Involvement may mean taking a chance. You will, however, gain more than you give—regardless of which level you serve. You will be “speaking for the trees.” You will also be living the formula of 10 two-letter words:

“If it is to be, it is up to me.”

—Glen Shirley

MnSTAC's President Shirley lives in a “rurban” area (southern Dakota County). He is Bloomington's City Forester and an ISA Certified Arborist.



GARY JOHNSON

Site stress can lead to stem injury during the winter, particularly in species used to the moist and shady forest such as this white ash.



Establishing New Trees, from p. 1

landscape to recover from the shock of root loss if it had been field grown, or cultural shock if it had been nurtured in a container by the nursery. However, if the planting site is a particularly harsh site, which is typical for many urban planting sites, this shock period may continue much longer.

The transplant shock period should be considered as the period of intensive care. Maintenance practices should focus on eliminating or reducing all unnecessary stresses such as water stress (too much, too little), competition for root space from other plants (especially turfgrass), insect pests or pathogens that wound or defoliate the tree, nutrient deficiencies and unnecessary wounding. During this period, the tree's energy should be focused on root growth and establishing a more characteristic root:shoot balance for that particular species.

■ “I water my lawn with one inch of water a week, so I'm sure that the trees are getting plenty of water, too.”

Water is the single most important requirement for establishing healthy trees. And it's not just water, but the proper **amounts** and **frequency** of irrigation. There is no magical formula for correctly and adequately watering all types and sizes of trees—that “one inch of water per week” rule for trees has no research to defend it. There is research that supports the practice of frequent—twice per week—irrigation, supplying three to five gallons of water directly to the soil/root ball of the planted tree (two- to three-inch caliper trees; Gillman et al., 1998). But even this research-based information should be used with caution and not accepted blindly as the “rule” for watering all trees.

Trees require a uniformly moist soil to a depth of at least eight to ten inches. In a good year, with regular and adequate rainfall coupled with a layer of mulch over the tree's root system, irrigation may never be necessary beyond the establishment period. But more often than not, rainfall is unpredictable. In addition, soil texture, structure and percolation (drainage of water) influence the amount of water available to a tree, and therefore may cause an adjustment to all “rules” about the frequency and amount of irrigation supplied. For instance, sandy soils that drain rapidly

don't retain water very long. Trees growing on these types of soils will probably need irrigation more frequently than twice a week, especially for larger trees planted in full sun in windy and hot climates.

Conversely, trees planted in clayey soils that do not percolate adequately may require less frequent irrigation. In fact, frequent irrigations may do more harm than good by displacing essential soil oxygen, which in turn may result in the death of the trees. So, proper water management is a matter of monitoring the tree's health (watching for abnormal wilt), ensuring that the soil drains water adequately (a 24-inch column of water should drain in 24 hours) and periodically checking the soil to a depth of eight to ten inches (use a soil probe).

■ “If a two- to four-inch layer of mulch is good, then 20 inches must be tremendous!”

This may not exactly be a verbalized myth, but many people certainly act as though they believe it! Adding two to four inches of mulch—preferably an organic mulch—over the root system of a new tree is one of the best cultural practices employed. It's a beautiful mimic of a typical forest floor. The mulch retains soil moisture and keeps it more uniform (less drying out of the soil between rains), keeps the soil temperature more uniform, all but eliminates competition for moisture from turfgrass, builds up a new soil layer as the mulch decomposes, and keeps lawnmowers and string trimmers away from tree stems. And, it is well documented that mulched trees grow faster and healthier than non-mulched trees on similar sites (Green and Watson, 1989).

More, however, is not always better—at least when it's piled up against the stems of trees. Mulches, especially organic mulches, should never be piled up against the stems of young trees. Organic mulches are more likely to remain moist and this creates an environment favorable to fungal pathogens. Trees that have been wounded on the stem may be more predisposed to stem canker pathogens if the mulch has covered the wound. In addition, trees that are more prone to form adventitious roots (roots emerging from the stem) will form these roots with ease if mulch covers the stem. Quite often, these adventitious roots develop into stem girdling roots. (For more information on the problems of excessive mulching,

see Rich Hauer's article on page 9 of this issue.)

Renewing mulch layers annually or periodically should be done with as much care as the first layer. One to two inches of new mulch is usually sufficient, but don't pile this on the stem. If mulch volcanoes are observed in the landscape (inverted cones of mulch, creeping up the stems of trees), pull them down and away from the stems and spread them out. As a tree becomes larger, expand that original three- to five-foot diameter of mulch installed at planting to a 10-12 foot diameter ring of mulch around the more mature trees.

■ “Wrapping the stems of trees with paper or plastic will prevent winter injury.”

Unfortunately, there is still a lot of controversy surrounding the use of tree wrap for winter protection. No harm will come from it if it's done correctly—by placing light-colored wrapping on the stems in late autumn and removing it in early spring—but the cold-damage benefits are debatable. If the winter injury that needs to be prevented relates to rodent or other critter damage, however, installing a plastic or PVC sleeve around the stem and placing another screen barrier outside of the plastic can be effective (Johnson and Ash, 1998).

Two factors directly or indirectly affect the incidence of stem damage to trees during the winter months: **wounds on the stem** and the **water status of the tree** when it goes into dormancy. Trees with stem wounds are more likely to suffer wood or bark splitting, usually originating at one or more of those wounds. And trees that are water-stressed going into dormancy are more likely to suffer wood or bark splits and frost cankers of the bark. So, limit the wounding—especially unnecessary large pruning wounds or mechanical injuries—and make sure the trees are not water-stressed going into the winter. Winter injury to stems will be greatly reduced.



While the role of tree wrap in winter protection is debatable, it's certain that rodent damage can be reduced with proper use of screen and plastic barriers around the trunk.



Establishing New Trees continued on p. 4

Establishing New Trees, from p. 3

■ “It’s spring and the local garden center has a sale on fertilizer, so it must be time to fertilize my trees.”

And the complementary statement:

■ “If two pounds of fertilizer are good for the tree, five to ten pounds must be tremendous!”

It is not common that trees suffer from soil nutrient deficiencies. More often, the cause of the suffering is from inadequate water, poor/damaged root systems or an outrageously high soil pH. And it may not be an indication of poor health if a tree is not growing very fast or is not getting very large. It may be perfectly healthy for the site it’s growing in. If the average twig growth rate is between two and six inches, the color of the leaves appears normal for the species and the tree is not suffering any abnormal die back, then it’s probably not in need of nutrients.

However, if the newly-planted tree is in a very poor soil, or if there is a need for more rapid growth (to quickly block a view, for instance), then fertilization can be beneficial. For most trees, fertilizer should be applied in the spring or mid-autumn (after the trees have begun their descent into dormancy). If

newly-planted trees are not likely to ever receive very much attention after planting and the planting site soil is deficient, a slow-release, balanced analysis fertilizer mixed into the planting backfill soil at a moderate rate (four pounds of nitrogen/1000 square feet) may be beneficial.

In other situations a “maintenance fertilization schedule” may be employed. Every four to five years, apply approximately four pounds of nitrogen per 1000 square feet of rooting area (Harris, Clark and Metheny, 1999). This stimulates new growth but not excessively, especially if the product is in a slow-release form (release over a period of 3-12 months). Avoid adding fertilizer to the root system, however, if the tree is not receiving adequate water. Water

is still the overriding amendment that determines plant health, even for established, mature trees.

■ “Remove one-third of the tree’s canopy when it’s planted and there should be very little pruning needed thereafter.”

A two-fold misconception! There’s no research that supports removing one-third of the canopy at planting. In fact, research has long shown that this type and extent of pruning may be harmful, not only for tree establishment but for long term form and structure (Whitcomb, 1987). Anyone who carefully examines the structure of most urban trees realizes that they form new branches and leaders, many of which are poorly attached and/or placed. See Rich Hauer’s article on page 7 of this issue for more information.

At planting time, you should remove all codominant leaders, broken and dead branches, branches that have included bark in their attachments and wounded or rubbing branches. Revisit the trees at least once during the four or five years after planting to remove dead branches, water sprouts, suckers and other poorly attached branches or new leaders. At this time, it may be difficult to visualize the exact form of the tree when it matures, but pruning should encourage a well-balanced scaffold branching pattern, solid branch attachments and a single leader. (Scaffold branches are the main branches.) For more detailed information on pruning, see the article *Winter Pruning* by Katie Himanga, *Shade Tree Advocate*, Vol. 1, No. 1, pages 5-7.

Ideally, all trees would be inspected annually and cared for immediately. Suckers and watersprouts should be removed in late summer. If you remove them in the spring, they are soon replaced by others that will need to be removed that year. Winter is the best time for structural pruning—that is, establishing and maintaining that optimal scaffold system for the tree. Summer is a good time to check the tree for dying branches or others that rub against structures, people on sidewalks, trucks on arterial streets or power lines when the weight of full foliage bends the canopy.



Annual or seasonal care is not always practical or possible in most community landscapes. A goal of pruning all trees every four to five years is attainable, however. Although it is not optimal, it is usually adequate for most trees in the establishment phase. Four to five cycles of a four-to five-year pruning cycle should prepare the trees for long term structural integrity. Although maintenance pruning will continue for the life of an urban tree, a well-structured tree should require a minimal amount of live wood pruning as it matures. (For more information on mature tree trimming, see the article *Mature Tree Crown Thinning* by Jeff Rick, *Shade Tree Advocate*, Vol. 1, No. 1, page 8.)

Many other important maintenance requirements will likely emerge over the establishment years of a tree—disease and pest control, storm repair, wound repair—but these five factors (good planting practices, watering, mulching, preventing injury, proper pruning) are arguably the most influential. All are relatively simple and much more cost-effective than repair work, therapy and replacement after the tree has become larger and unhealthy. And fifteen to twenty years go by too fast. 🌿

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Programmed Tree Establishment

Seasons of Care: Years 1-20

Spring

- Fertilize every 4-5 years (or in autumn) if desired.
- Mulch every 2-4 years (or in autumn).
- Begin irrigation if rainfall is not adequate to keep the soil moist to 8-10" depth.
- Remove winter stem protection in late winter to early spring.

Summer

- Monitor health (diseases, pests, disorders) at least once a year.
- Summer-prune for elevation and structure if necessary. Repeat at least once every 4-5 years.
- Remove suckers and watersprouts in late summer.
- Continue monitoring soil moisture and irrigate to maintain adequate level.

Fall

- Fertilize in mid-autumn (if not done in spring) every 4-5 years if desired.
- Mulch every 2-4 years (or in spring).
- Continue irrigation if droughty, but reduce frequency to allow for normal onset of dormancy.
- Apply winter stem protection in mid-late autumn.

Winter

- Monitor structure of trees.
- Structurally prune trees during winter dormancy. Repeat at least once every 4-5 years.
- Remove winter stem protection in late winter to early spring.

Oak Wilt in Minnesota: It's Still Here and We're Doing Something About It!

By Jennifer Juzwik and Gary Johnson

Yes, oak wilt is still around and killing large numbers of oaks annually in Minnesota. Although the progress of oak wilt has been slowed through the concerted efforts of State agencies, private contractors and determined homeowners, the battle to “control” this infectious disease is ongoing and will continue to be as long as there are oaks in Minnesota.

Oak wilt is most common in the Upper Midwest. In Minnesota, it is most destructive in the southeast section of the state. That's not a big surprise, since the southeast is home to vast acreages of native and planted oaks. The greatest concentrations of oak wilt pockets are in and adjacent to the seven-county metropolitan area, but the disease occurs down the southeast border of Minnesota and the fungus aggressively infects trees in at least 15 counties (1991 survey). Oak wilt is listed as an increasing threat in an additional 16 adjacent counties. In still another 31 counties, oak populations are at risk. These three zones of realized and potential oak wilt outbreaks make up the majority of the entire state of Minnesota!

Red oaks such as northern red oak and northern pin oak are highly susceptible to infection by the oak wilt fungus. Oak wilt is easily identified in red oaks by the rapid wilting of infected trees. After symptoms first appear, a red oak generally wilts completely in two to six weeks, from the top of the crown down and from leaf tip and margins to the bases of the leaves. White oaks (white, bur, bicolor) range in susceptibility from moderate (e.g., bur oak) to low (e.g., white oak). Infected white oaks die slowly, a branch at a time, often surviving for many years.

The only way the fungal causal agent of oak wilt can cross highways, rivers and open fields is by insect vectors, primarily by sap beetles of the Family Nitidulidae. This spread occurs infrequently, but is important as it is the method by which new oak wilt

infection centers are started. The beetles are attracted by the fruity smelling spore mats of the oak wilt fungus. The insects pick up fungal spores during their visits to these mats on recently killed oaks. Several species of these sap beetles are also attracted to fresh wounds on healthy oaks during spring (April, May, June). Visitation of a fresh wound by a fungus-infested beetle results in the spread of the disease.

Cost-shared oak wilt suppression programs have been very successful in slowing oak wilt in many areas of Minnesota, but these programs must be continued if this disease is to be “controlled” at an acceptable level. Think of oak wilt as a “smoldering fire”; if not monitored and suppressed it can explode and cause catastrophic tree losses in a very short time. Stopping the spread of the fungus through common root systems is most important and can be done by mechanical barriers using a vibratory plow with a 5-foot blade. Vibratory plowing that severs root grafts has been very successful at halting the spread of infection centers, as have other management strategies such as eliminating infected trees by debarking, burning, burying or wrapping and sealing them in plastic.

As tree advocates, we need to spread the word so the public can do its part in helping control oak wilt. Important practices include:

- Don't transport any infected wood—such as lumber, firewood, or landscape timbers.
- Don't prune or wound oaks in April, May or June. If wounding is unavoidable, cover the wound immediately (within minutes) with a water-based paint or shellac.
- If possible, do all oak pruning during the no-risk period between October and March.

In high-value white oaks, systemic injection with propiconazole by qualified arborists may prevent spread of the disease to trees adjacent to those that are oak wilt infected. This can often prevent further disease development for at least two years in white oaks if they are only exhibiting early symptoms of oak wilt.

For more information on the Root Graft Barrier Contractor List or the Oak Wilt Consultant List, contact Rich Hauer at the Minnesota Department of Agriculture/Agronomy Plant Protection Division (651-296-0592). Or, contact Jennifer Juzwik (651-649-5114) and the Minnesota Interagency Working Group on Oak Wilt. 🌱

Jennifer Juzwik is a research plant pathologist and project leader with the USDA Forest Service, North Central Forest Experiment Station. Gary Johnson is an Associate Professor at the University of Minnesota, Department of Forest Resources.

Compensatory Pruning

... To prune or not to prune at planting, that is the question!

By Rich Hauer

Should tree canopies be pruned at planting? Thirty years ago you would have likely heard yes. Now you will likely get a mix of yes and no responses. Conventional wisdom says tree canopies should be pruned at planting to compensate for root loss. Tree root systems are reduced in size to facilitate transplanting bare root, balled and burlaped, and tree spade-moved trees, altering the natural root to crown balance. Removing branches at planting to compensate for root loss just seemed logical.

Compensatory pruning is the removal of branches to offset the loss of roots during any period of the tree's life. Reestablishing the natural balance of root to crown conventionally meant removing one-third of the canopy. It was thought that transplant survival should increase, canopy dieback should decrease and trees would be healthier because of compensatory pruning. As reasonable as this practice seemed, a scientific base to support it never existed. In fact, a mounting body of evidence over the last twenty years finds that compensatory pruning does not benefit newly transplanted trees.

To understand why compensatory pruning is not beneficial, let's travel back over 20 years to a tree nursery in Oklahoma. A research team lead by Dr. Carl Whitcomb was conducting a weed control study. As part of the research plan, tree canopies were pruned back at transplanting—since this was the standard practice any respectable arborist and horticulturist would do. However, Mother Nature intervened! A rainy spring season prevented



GARY JOHNSON

compensatory pruning in 40% of the trees. By the time the nursery fields dried and workers could resume work, the trees had started their spring flush of growth. It was decided not to prune the remaining unpruned trees. During the first growing season a fortuitous finding occurred: pruned trees grew slower and had greater mortality. This certainly flew in the face of conventional wisdom that trees pruned to compensate for root loss should do better. Perhaps the observations were merely due to species differences. Trees within each species were treated equally; three species had all trees pruned and two species had no trees pruned.

Follow-up experiments were conducted to confirm if the earlier findings were merely due to species differences or if compensatory pruning was truly not beneficial. In a total of 11 different species, subsets of trees were either not pruned or pruned to remove 15%, 30% or 45% of the canopy. Each treatment was replicated 12 times and tree responses were evaluated for two years. Again, compensatory pruning was found to be not beneficial. Since then three

Pruning should be directed at eliminating multiple codominant leaders and damaged and rubbing branches, evident in the specimen above, rather than arbitrarily compensating for root loss.



Pruning, from p. 7

additional studies in other locations (Colorado and England) by different research teams produced similar results.

The findings in England are interesting in that they suggested pruning to compensate for root loss was not the critical question; rather, soil moisture was more important. When pruned or unpruned treatments were grown in a droughted condition they both grew very little. But when water was not a limiting factor, pruned trees had less root growth, fewer leaves and smaller leaves. Trees not pruned at planting that received ample water had more leaf tissue to photosynthesize and a greater ability to produce plant-growth regulators to influence root growth.

But if compensatory pruning is not the answer, what can be done to decrease canopy dieback, increase transplant survival and foster tree health? Water! It's as simple as that. But how much? A conventional tree-watering guide suggests 1 to 1.5 inches of water every seven to ten days is appropriate. But apparently this common watering guideline is not any more research-based than the compensatory pruning assumption.

Research within the last five years from the Morton Arboretum and the University of Florida at Gainesville suggests more frequent watering is optimal. Newly transplanted trees benefit from daily watering for the first one to two weeks, applying approximately 1.5 gallons per caliper inch per watering. For the next two or three months, water trees every two to three days and then weekly until established. Remember, newly transplanted trees are absorbing water from a diminished rooting area (i.e., apply water to the root ball). Roots must generate and grow into surrounding soils before a larger soil volume can be tapped for moisture. Trees in Minnesota will become established within one to one-and-a-half years for each caliper inch of stem. Thus, it takes two to three years before a two-inch caliper tree is established.

If you cannot adequately meet the water requirements of newly transplanted trees, planting smaller trees is recom-

mended. For example, one- and two-inch caliper trees have less root loss and recover faster than trees two inches to three inches in stem caliper. Mulching trees to a two- to three-inch depth is recommended as it helps to conserve the precious water.

To prune or not to prune at planting—that is the question! Removing branches to compensate for root loss (i.e., compensatory pruning) is not beneficial—that is the answer. At least five independent research studies have reached this conclusion. The fact is young adolescent trees require nurturing to survive and become prosperous adult trees. The simple act of watering every couple of days with 1.5 gallons of water per stem caliper inch is one of the best things you can do for newly-planted trees. Selecting structurally sound and healthy plants is also a must. Whitcomb said it best 20 years ago: “Top pruning and other practices are unlikely to help an unthrifty plant and a thrifty plant doesn't need it.” 🌿

Richard Hauer is a Plant Health Specialist with the Minnesota Department of Agriculture, Agronomy and Plant Protection Division



GARY JOHNSON

Multiple leaders can be a problem in evergreens as well as in deciduous trees. Removing all but one of the codominant leaders is a valid pruning practice at planting time.



Branch Removal at Planting

Even though compensatory pruning is not recommended, some branches may require removal at planting. Branches that are weakly attached (i.e., have included bark) should be removed at planting—unless you can revisit the tree and prune it within the next few years. Also, any dead, dying, and diseased branches should be removed. If removing these causes more than 10 to 20% canopy loss, do not accept the tree. If your supplier has many trees that require extensive pruning, it may be best to either look for a new supplier of nursery stock or discuss quality issues with your current supplier. We often forget that as buyers we can influence the quality of nursery stock. Accepting inferior stock only perpetuates more of it entering the market.

Too much mulch

is not a good thing!

By Rich Hauer

Mulch can be one of the best additions for newly planted, establishing and established trees. Mulch moderates soil temperatures, keeps instruments of destruction such as weed whips and lawnmowers away from trees, lessens soil moisture evaporation, adds organic matter to soil and supports soil microbial populations including mycorrhizal fungi. Storms throughout Minnesota in 1998 created an enormous volume of wood chips for use in mulching woody plants. However, too much mulch against tree stems or over the root system can do more harm than good!

Have you ever observed trees growing on top of a beaver lodge or in the crater of a volcano? Though this may happen, most beaver lodges and active volcanoes tend to lack trees. Yet, take a stroll in your neighborhood and you are likely to find a case of the overzealous mulcher trying to help the tree by replicating these features through “beaver lodge” or “volcano” mulching. Fortunately beaver-lodge-encased trees do not attract beavers, nor does volcano mulching favor lava eruptions, both of which would surely cause instant death to trees. Yet, overmulching in these ways still hurts trees by:

- increasing the likelihood of rodents damaging the stem
- maintaining a wet environment around bark that promotes disease and death of bark tissue



RICH HAUER

Proper mulching can be one of the best things you can do for your tree.



- creating anaerobic (without oxygen) soil environments, and
- decreasing the exchange of oxygen and carbon dioxide through lenticels in the lower stems.

Plants *respire*, which means they use oxygen to convert stored energy from photosynthesis to energy forms that drive plant functions. A lack of adequate oxygen slows or stops growth and can result in the death of living cells and plant tissue.

The effects of overmulching are not immediately observed. It may take a few years for the affects to be noticed. If root and stem pathogens have gained an advantage, it may be too late to do anything.

But what can be done?

First, **don't over-mulch**. Recommendations vary on the exact depth, ranging from 2 to 6 inches. When using a fine-textured mulch (i.e., cedar bark mulch), apply a thin-



Right: the beaver-lodge mulching approach . . . an upcoming problem for the tree in question.



RICH HAUER



RICH HAUER

Left:
the mulch
volcano
■ ■ ■

Mulch, from p. 9

ner amount (2 to 3 inches). Coarse-textured mulch (i.e., twiggy mulch) can be

applied to a thicker depth (3 to 6 inches). Whatever depth is applied, keep mulch away from the stem or you will face problems with rodents or pathogens.

Second, if a tree is overmulched, simply **spread out the material to expand the diameter of the mulched area**. Your tree will be happier and healthier!

Third, if you know of trees that are forced to grow through beaver-lodge or volcano-mulched environments, **educate** the practitioner of the ramifications of the situation. 🌿

Richard Hauer is a plant health specialist at the Minnesota Department of Agriculture.

- ✓ Don't over-mulch.
- ✓ Spread out excess mulch.
- ✓ Spread the word to others.

New and Controversial Research on Types and Uses of Mulch in the Landscape

A summary of a MN Student Society of Arboriculture, Professional Seminar Series presented by Dr. Jeff Iles, Iowa State University

Maybe it's been just a general aversion to more amorphous surfaces? Maybe it's been the general belief that organic is always better? Or, maybe it's been just a thinly veiled prejudice toward the aesthetic qualities of anything other than earth tone in color and soft in texture? Green professionals and especially tree lovers have generally promoted organic mulches on the basis that they improve plant health, and avoided mineral (rock) mulches, claiming that they are at best an eyesore and at worst detrimental to tree health. But is that an undeniable fact? Would it hold true if scientifically tested?

Dr. Jeff Iles, a professor of horticulture with the Iowa State University Extension Service, put that commonly held belief to task. In a field experiment located at the University in Ames, Iowa, he compared two general types of mulch—organic and mineral (rock)—against a control, bare soil, and discovered something rather disconcerting. Rock mulches weren't harmful to tree health, at least on a short-term basis!

The soil under the mineral mulches (lava rock, pea gravel, crushed brick, Carmel, river rock) was cooler than exposed soil, as expected, but warmer than soil under organic mulches (wood chips, screened pine, shredded bark), again as expected. Both types of mulches kept the soil more moist than bare soil. Even though organic mulches were statistically more moist, it wasn't a huge difference from the mineral mulches (31-32% vs. 29-31%). And as far as soil pH was concerned, the soil under the various mineral mulches remained more acidic than those under organic mulches.

Trees under mineral mulches actually grew more in both stem caliper and height than most of those mulched with organic materials or the bare-soiled controls—not a tremendous amount, except for the quantity of leaves produced. Those trees with mineral mulches performed very well compared to the organic mulches. Every mineral-mulched tree put out more foliage mass than every organic mulched tree!

So, is it time that we all rake away the wood chips and replace our "natural" mulches with rocks? That wasn't Dr. Iles' message. His research was with one tree species (Fairview Flame red maple), growing in good Iowa loam, from 1997-1998. Jeff made no sweeping generalizations from this data. Rather, he posed the question that maybe our general opinion of rock mulch as bad mulch for tree health may not be so accurate. More research is definitely necessary: different trees, different soil types and more growing seasons. But it does look like another myth may be challenged . . . even if you don't like the way rock mulch looks!

Gary Johnson, University of Minnesota, Urban and Community Forestry

Spreading the Word About Your Tree Events

Publicity through the media can be a powerful tool in building awareness, creating support and providing a positive image for community tree programs. While a variety of tools can help spread the news, the **News Release** (also called Press Release) is an easy and practical way to attract attention to your program. It's generally written to announce a special event, but can also be used to call attention to on-going programs of community interest.

To be easily understood by reporters, news releases should use a standard format and follow guidelines that include:

■ The Heading

Write NEWS RELEASE at the top of your sheet.

■ The Date

Be sure to include the date at the beginning of your release. If the news should be released now, say *For Immediate Release*. If it is to be released by a certain date, say *For Release by _____*.

■ The Contact

Always include the name and telephone number of a person reporters can call if they have questions or need more information. E-mail and website addresses, if you have them, can be included as well.

■ The Headline

Try to summarize the information into a sentence that will grab the interest of the reporter who receives it

■ The Format

Summarize the most important elements in the first paragraph, answering the five "W" and the "H" questions. (Who, What, Where, When, Why, How). Add detail in the following paragraphs. If a reporter has to cut copy, he or she should be able to cut later paragraphs without losing important details.

Be as clear and concise as possible. Describe what a visitor to this event will actually see. Be precise about location (room numbers, locations within a park, etc.).

■ Human Interest

Include a quote or two from key people involved in the event. Quotes draw the reader by adding a personal touch to the story.

■ The Length

Limit your release to one or two pages, double spaced and with wide margins. If there is a second page, center the word "more" at the bottom of the first page to make sure readers see all the information. At the end of the release, center ### or -30-. It is the reporter's signal for "the end."

■ The Follow-Up

After sending your news release, make a follow-up call. Reporters are often pressed for time and juggling a range of stories and deadlines, so organize what you want to say before dialing the phone. Practice or jot down two or three sentences that summarize why the story is important. Don't just ask if they got the release; ask if they need more information. Offer to help in any way you can. Whether we like it or not, media people have the power to decide what is news and how they will present it. Be courteous and prepared to meet the reporter's needs.

■ Photo Releases

If you send a photo along with your news release, make sure you have permission from everyone in the photo to use the picture. Tape a short paragraph on the back of the photograph to identify people and explain what is happening.

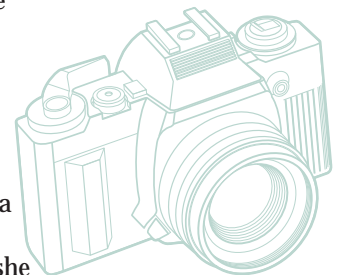
■ Photo Opportunities

If your goal is to get media coverage for a specific event, you might want to note photo opportunities available to a reporter if he or she visits the event (children planting trees, expert tree climbers, etc.).

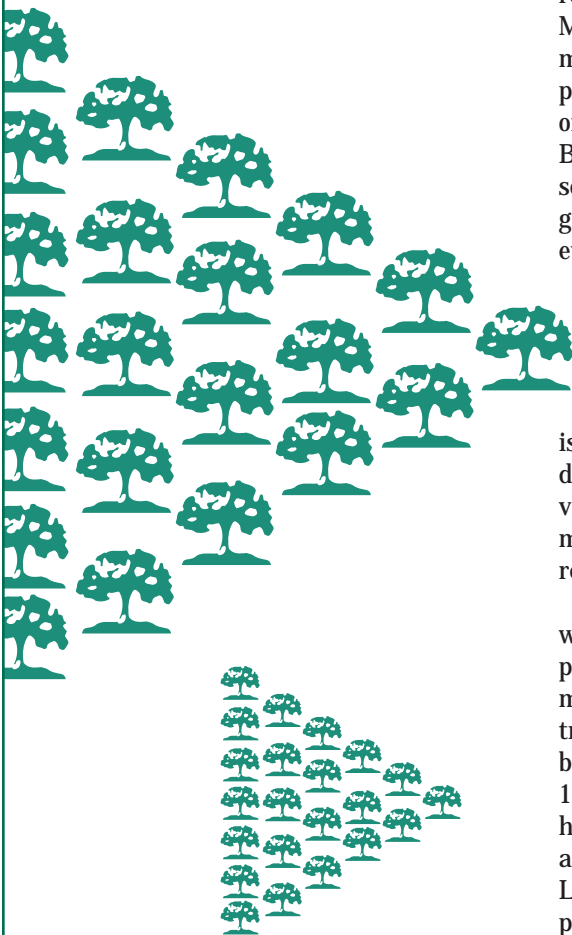
Creating a good media program is more than just sending a news release now and then. Try to establish a relationship with media people who cover community interest stories and then give them what they want, using the tools that work for them. ✨

NEWS RELEASE
April 7, 1999
For Immediate
Release
Contact: Jo Ann Reed
A New Arboretum

*Intelligently
crafted news
releases are
powerful
tools.*



Community Planting Projects: Mobilizing the Volunteers



Volunteers are the life-force behind hundreds of planting projects across the state each year. A lot can be accomplished in a short time, and the community tends to get invested in new ways when citizens work on projects themselves. The structure and organization of projects vary from one to another, but the success of each is directly linked to effective use of volunteers. Read on and glimpse some ideas from established projects that can work for you, too.

Greening the Great River Park

Operating as an ecological restoration project along the Mississippi River banks as they meander through St. Paul, this planting partnership may draw 400 or 500 volunteers on a single day. Business owners, schools, churches, scout troops, state agencies and the general public take part in planting events twice a year—in spring and in fall. The project includes planting on both private and publicly-owned land.

As with any volunteer effort, much of the coordination is done far in advance of the work day. The event is publicized in a variety of ways, but also includes a mailing to a list of about 4,000 repeat volunteers.

On the day itself, the entire work area is divided into work or planting units. Ten to 15 volunteers make up each unit, along with trained supervisor. Sign-up sheets become the work unit. There is a 15-minute orientation (guidelines, how to plant, etc.) followed by one-and-a-half to two hours of work. Lunch is donated; beverages and portable toilets are provided. Many children are involved and smaller tasks are planned so even young children can participate. Families enjoy doing the project together and intergenerational groups are common.

The project has been funded as a five-year program in cooperation with the St. Paul Foundation since 1995. There will be a closure event this year, but plans are being developed to continue greening the banks.

Assistant Director Kathy Dougherty offers these tips for a successful volunteer effort:

- Make the event really simple for volunteers (easy sign-in, training and direction . . . people want to have fun and to help).
- Limit the event to a few hours . . . not all day.
- You simply can't plan enough. Time spent planning and pre-thinking every part of the event will help prevent disarray later. Volunteers will feel good about being involved in an organized and worthwhile project, and many will come back year after year.

For more information: Kathy Dougherty, 651/224-9885.

Beautifying the Inner City

Tree advocate/volunteer Bonnie Lawrence is well known and respected for her feisty commitment to St. Paul's community forest. Many recognize her as a catalyst for building citizen awareness and enforcement of the city's anti-stapling ordinance, but she is also a leader in promoting inter-city planting. Among other projects, she has been heavily involved in Arbor Day planting at Central High School (1992), projects at St. Paul's Dunning Field, community gardens, boulevard planting and roadside beautification. Her group's planting on I-94 right-of-way near Concordia was a first-of-its kind project and opened many eyes to new possibilities for city beautification.

Motivating interested citizens into action is Bonnie's forte.

Because so many of her projects have involved public property, Bonnie stresses the need to make sure communication and support from public officials are in place as projects are planned and implemented. Make sure you have more than just a vision—do some research and prepare to sell your ideas to local officials. This year's planting can literally be destroyed by next year's maintenance crews when communication isn't clear. Or, one project can be planted over or interrupted by someone else's subsequent project when information is lacking.

Expertise is often needed from community tree or garden professionals in the types of planting Bonnie does. Species and site selection are especially important because the stresses of city living (salt, watering irregularities, emissions, people, pets, etc.) pose challenges to any planting.

For more information: Bonnie Lawrence, 651/646-3433.

Beautifying Rural Roadsides

The Minnesota Department of Transportation has a partnership role with local communities as they spruce up their roadsides with flowers, native grasses and trees. Highway 11 as it runs through Warroad and other northern communities is an example. Ringleaders in the community provide impetus to the project initially. Once a partnership is signed between MnDOT and the community, MnDOT provides planting and project expertise and works with local leaders to help them accomplish their goals. They help make site and species selections, make sure maintenance needs and other rules are followed, pay for the nursery stock, help train and supervise volunteers and oversee group safety. The latter is a main concern because plantings are often done near busy roads.

Volunteer recruitment and coordination is handled by the local community. MnDOT's Bob Slater says community dedication and commitment to carry the project through are keys to a successful project. He recommends keeping volunteer projects small, especially the first year. Some towns are implementing projects in phases, and it works well. Planning specifically how volunteers will be used, organizing and supervising the work groups and supporting the volunteers in their efforts are vitally important.

For more information on Minnesota Department of Transportation roadside enhancement volunteer projects: Bob Slater, Forester, at 651/779-5104 or Scott Bradley, Landscape Program Coordinator at 651/779-5076.

Ramsey Shademakers

The City of Ramsey has a core of local homeowners and citizens who make up an on-going volunteer group that advocates for and plants trees. Dubbed the Shademakers, the dozen or so members meet monthly at member's homes. Socializing is part of the fun as gardeners, city officials, tree professionals and interested others come together to plan and implement community planting projects. A plus for the group is that several Shademakers are tree-related professionals who live in the area. One member is developing a back yard nursery at his home, which offers unique opportunities to work with local seed and stock.

The Shademakers group is a win-win situation for Ramsey. The group promotes community forest projects, helps train citizens in tree-related areas and helps implement the Ramsey Tree Sale each spring.

For more information: Bruce Bacon, City of Ramsey Forester: 612/427-1410.

Celebrate Arbor Day!

“Planting Living History: An Arbor Weekend” is the theme of this year's Arbor Event at the Oliver Kelley farm near Elk River. Here's a great way to spend a Sunday with friends or family, step back in history and celebrate trees at the same time.

“Planting Living History” is held in conjunction with the Sherburne County Tree Board, MnSTAC, the City of Ramsey, the Minnesota Historical Society, DNR Forestry and a host of state, county and local agencies/groups. Visitors can participate in the ceremonial Arbor Day tree planting, view a program on native prairie restoration that includes a controlled prairie burn and take self-guided tours on the natural history trail system that runs along the Mississippi River. An information fair at the Kelley Farm Interpretive Center promises something of interest for everyone, and visitors can take home seedlings to plant in honor of Arbor Day.

The Kelley Farm is located 2 1/2 miles southeast of Elk River on U.S. Highway 10. The celebration is on Sunday, May 2 from noon to 5 PM and admission is free. For more information call 612/441-6896.



About MnSTAC

The Minnesota Shade Tree Advisory Committee (MnSTAC) was established in 1974 by a group of concerned citizens to address the health and well being of community forests. MnSTAC provides a forum where people forge a collective vision for the future of Minnesota's community forests and:

- advocates for public and private community forestry interests
- unites for the exchange and dissemination of ideas and information
- serves as the State Urban Forest Council to advise the State Forester on the implementation of state and federally-funded programs.

MnSTAC is recognized throughout Minnesota and the country for its expertise, advice, coordination and support for community trees. It is an organization of diverse individuals who represent a broad spectrum of tree-related interests. It fosters and supports local community tree programs across the state so healthy community forests are fully integrated into community development, infrastructure, education and management.

The MnSTAC resources listed here encourage your calls, questions and sharing of ideas.

MnSTAC BOARD OF DIRECTORS

President: Glen Shirley, City of Bloomington
 —612/948-8760 (Fax: 612/948-8770)

Vice President: Kirk Brown, Twin Cities Tree Trust—612/920-3239

Dan Gullickson, MN Dept. of Transportation
 —651/779-5084

Katie Himanga, Heartwood Forestry
 —651/345-4976

Ken Holman, DNR Forestry
 —651/772-7565

Gary Johnson, U of M Forest Resources
 —612/625-3765

Mike Max, EnvironMentor Systems, Inc.
 —612/753-5505

Dwight Robinson, MN Dept. of Agriculture
 —651/296-8578

Mark Stennes, Top Notch Treecare
 —612/922-3239

MnSTAC COMMITTEES AND TASK FORCES

Arbor Month Partnership

Chair: Don Mueller, DNR Forestry
 —651/772-6148

Constitution and Election

Chair: Ken Simons, Ramsey County Parks
 —651/748-2500

Education and Research

Chair: Gary Johnson, U of M Forest Resources—612/625-3765

Forest Health

Chair: Steve Kunde, Kunde Company
 —651/484-0114

Legislative

Chair: Mark Schnobrich, City of Hutchinson
 —320/234-4459

Outreach

Co-Chairs:
 Peter Bedker, Treescapes
 —612/682-9562
 Mike Max, EnvironMentor Systems, Inc.
 —612/753-5505

Planning

Chair: Dave DeVoto, Stacy, MN
 —612/462-3347

Publicity and Awards

Chair: Terri Goodfellow-Heyer, MN State Horticultural Society—651/643-3601

Scholarship

Chair: Ralph Sievert, Mpls. Park and Rec. Board—612/370-4900

Tree Emergency Response

Chair: Katie Himanga, Heartwood Forestry
 —651/345-4976

Tree Preservation Task Force

Chair: Paul Buck, City of Plymouth
 —612/509-5944

Wood Utilization Task Force

Co-Chairs:
 Mike Zins, U of M Arboretum
 —612/443-2460 Ext. 247
 Jim Hermann, Mpls. Park and Rec. Board
 —612/370-4900

Regional Shade Tree Advisory Committees

To add more voices to the forum and encourage networking more easily at the local level, three regional MnSTAC units are in place.

Southeast STAC

Southeast STAC represents communities in the eleven counties that are part of the Hiawatha Valley Resource Conservation and Development Area. For information, contact:

Chair: Henry Sorensen
Asst. Pub. Service Director, City of Red Wing
651/385-3674
Sec./Treas.: Katie Himanga
Heartwood Forestry, Lake City
651/345-4976

Headwaters-Agassiz STAC

HASTAC, the Headwaters-Agassiz Shade Tree Advisory Committee, was formed about a year ago as a regional branch of MnSTAC. The NW Regional Development Commission is the fiscal agent. For information, contact:

Chair: John Johnson
City Forester, City of Thief River Falls
218/681-1835
Sec./Treas.: Jeff Edmonds
DNR Forestry, Bemidji
218/755-2891

West Central STAC

West Central STAC started in 1997 to help communities in the north-west region share ideas, information and local success stories in managing community trees. For information, contact:

Chair: Bob Fogel
Director of Parks, City of Moorhead
218/299-5340
Sec./Treas.: Dave Johnson
DNR Forestry, Detroit Lakes
218/847-1596



Events and Conferences

May 1-5—**4th International Symposium on Urban Wildlife**, Tucson, AZ. Contact Bill Shaw 520/621-7265.

May 13—**Trees, People, and the Law**, St. Paul, MN. Contact NADF 402/474-5655.

June 6-9—**Balancing Working Lands and Development National Conference**, Philadelphia, PA. Contact Cindy Delaney 802/655-7215.

June 28-30—**Building with Trees National Conference**, Nebraska City NE. Contact NADF 402/474-5655.

Aug. 1-4—**International Society of Arboriculture 75th Annual Conference and Trade Show**, Stamford, CT. Contact ISA 217/355-9411.

Aug 5-8—**Midwest Environmental Education Conference**, Stillwater, MN. Info at <http://www.seek.state.mn.us/cal/calendar.cfm>

Aug 31-Sep 5—**9th National Urban Forestry Conference**, Seattle, WA. Info at <http://www.amfor.org/>

Opportunities

Through June, 1999 **MnReleaf Forest Health grants** available. Contact DNR Region Office or 612/772-7925.

New Publications

After the Storm: What to do with Storm Damaged Yard Trees. Revised fact sheet. Contact MN DNR-Forestry Division 651/772-7925.

Citizen Monitoring for Asian Long Horned Beetle (ALHB). Draft write-up available. Contact Teri Heyer 651/649-5238 to review copy.

Landscape Design and Selected Species for Residential Sites (5 brochures). 1998.

- Evergreen Shaded Garden Landscape Design
 - Native Shade Garden Landscape Design
 - Prairie Garden Landscape Design
 - Suburban Garden Landscape Design
 - Wet Meadow Garden Landscape Design
- Contact MN DNR Forestry 612/772-7925.

Internet

- **International Society of Arboriculture:** <http://www.ag.uiuc.edu/-isa>
- **Minnesota Department of Natural Resources:** <http://www.dnr.state.mn.us>
- **National Arbor Day Foundation:** <http://www.arborday.org>

Wilt Diseases of Shade Trees: A National Conference

This conference, sponsored by the American Phytopathological Society, will be held in St. Paul, Minnesota, August 25-28, 1999. It consists of 2.5 days of presentations on bacterial leaf scorch, pine wilt disease, oak wilt, Dutch elm disease, Verticillium wilt, phytoplasmal diseases and Fusarium wilt followed by an all day field trip. For more information visit <http://www.scisoc.org/opae/shortcourse/> or contact Cindy Ash, cash@scisoc.org, or 651/454-7250.



Arbor Day Farm: A Good Place to Visit!

When you're in the mood for a good tree-related seminar, a special holiday event or a place to simply get away for a little rest and recreation, consider the Arbor Day Farm and Lied Conference Center in Nebraska City, Nebraska. Managed by the National Arbor Day Foundation, the conference center is the only education center of its kind in America with staff and programs dedicated to tree planting and environmental stewardship. A full range of tree-related conferences, seminars and workshops are offered year around. Holiday events for friends and families include special celebrations for Mother's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas and New Year's Eve in 1999, plus an Applejack Festival and a Civil War Re-enactment. Overnight stays are popular, moderately priced and available for use by all.

Arbor Day Farm was once the agricultural estate of Arbor Day founder J. Sterling Morton. Based on the rich history of the land and Morton's lifelong commitment to trees, the Farm is now a National Historic Landmark.

There is much for tree lovers to see and enjoy. Thousands of trees fill the landscape. A state-of-the-art fuelwood plant is open for tours. The arboretums, windbreaks, agroforestry demonstration area, apple orchards, hazelnut research field and fuelwood plantation at Arbor Day Farm reflect the National Arbor Day Foundation's commitment to the best methods of tree planting and care.

For information or reservations at Lied Conference Center or Arbor Day Farm, call 1-800-546-5433.

Minnesota Shade Tree Advocate

A quarterly newsletter published by the Minnesota Shade Tree Advisory Committee.

Managing Editorial Group: MnSTAC Education Committee; Gary R. Johnson, Chair

Editor-in-Chief: Jan Hoppe

Design: Jim Kiehne

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Address inquiries to:

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St. Paul, MN 55108



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Adding Color to the Landscape

As homeowners, business people and community planners thumb through seed catalogs each spring, they are often inspired to add more color or structure (walls, walks, etc.) to their landscapes. Sometimes, that color comes through creating flower beds, ground cover and foliage under existing trees. The structure may run over or through tree roots. It's important to help people remember the needs of the trees as they dig, grade and plant around them. Key points:

- *Anything done under a tree that damages roots or changes the conditions around them can be harmful or even deadly to the tree.* Adequate access to water, nutrients and air is critical for root and tree health. This access can be changed through compacting the soil, covering the roots with non-porous materials, changing watering patterns, adding mulch, applying herbicides and fertilizers, digging and cultivating, changing the soil level, putting in new plants that compete for nutrients in the soil and more.

Roots are fragile, especially in young trees and in those species with shallow root systems.

- *Don't make drastic changes all at once.* Give the tree time to adapt if you plan a major planting or structural project.
- *Try to maintain the existing grade around trees.* Lowering the grade can

damage roots; raising it will affect the water drainage and amount of oxygen they can absorb through the soil. Tolerance depends on the type of tree, the soil itself and the effectiveness of surface draining. Many trees will tolerate up to six or eight inches of additional soil or fill while others are threatened by two or three inches. If grading results in a ground level too high for existing trees, retaining walls several feet out from the tree trunk might be an option. Carefully prepared shallow raised beds can sometimes be constructed on part of a tree's root area. A coarse planting medium that allows air and water to move through easily is important. A mixture of one-third loam, one-third coarse sand and one-third composted organic material by volume is good.

- *Consider containerized plants under trees.*

■ *Structural changes (walkways, walls, boardwalks, etc.) need to be carefully planned and placed to minimize root damage.* Boardwalks can be effective alternatives to paved walkways. They don't require the excavation that paved surfaces do and are often as suitable as paved walkways.

Armed with knowledge about the needs of trees, adding color and structure to the landscape is usually possible. A tree care professional can give specific advice.

Minnesota Shade Tree Advocate
115 Green Hall
1530 Cleveland Ave. N.
St. Paul, MN 55108

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