Changing the Urban Forest To Fit the 1990s

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The Municipal Tree Restoration Program (MTRP), a public/private partnership of the School of Forest Resources at the Pennsylvania State University, the Pennsylvania Department of Environmental Resources Bureau of Forestry, the U.S. Forest Service State and Private Forestry, and some electric utilities was established to help communities undertake comprehensive tree replacement and tree care programs. Educational and training opportunities are made available to community leaders on the proper selection of tree species for specific sites, proper planting techniques, and tree maintenance programs. Replacement trees are provided to qualifying communities as test plantings to determine the suitability of selected cultivars to street-tree use. Various services have been provided to 60 communities since MTRP was initiated 4 years ago.

Trees in the urban areas provide many amenities to society, and their benefits have been well documented. These benefits include shade, uptake of carbon dioxide, filtration of air pollutants, erosion control, habitat for birds and small mammals, aesthetics, and recreation. The cooling effect of trees in cities has taken on an even greater significance in recent years because of global warming. It has been estimated that one-third of the area of a typical American city or town is covered by tree crowns. However, it is also well known that urban trees can cause many problems. Examples include heaved sidewalks, which create difficulties for pedestrians; leaves and plant debris in the fall; power interruptions and costly cleanups after violent storms; clogged sewers; and hazards to motorists from improperly designed roadside tree plantings.

Can such a valuable resource be managed to minimize these problems while preserving the benefits?

When problems are analyzed, it becomes obvious that many of the problem trees were planted many years ago when species selection was limited. In many cases, trees were dug up from the forest and transplanted in the community. These trees did well until urban residents insisted on above-ground and underground utilities, paved roads, concrete sidewalks and curbing. Add to this urban air pollution, deicing salt, and other environmental insults, and the result is conflict between trees and the environment we have created for them. Furthermore, in many communities, little or no maintenance has been performed over the years, except the removal of dead trees. Repeated trimming by utilities results in deformed trees and creates infection courts for decay fungi. Trees weakened by fungi sooner or later end up as a liability to the community.

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Pennsylvania has many small communities in which such trees were planted before and shortly after the turn of the century during the City Beautiful movement. Unfortunately, when some of these old trees are removed, trees of the same species are often planted in the same or a similar location. Planting these new trees will result in the same problems. To correct this problem, a program was started in Pennsylvania 4 years ago and has proven quite successful. The program, the Municipal Tree Restoration Program (MTRP), is a partnership of the School of Forest Resources at the Pennsylvania State University (Penn State), the Pennsylvania Bureau of Forestry in the Department of Environmental Resources, and some electric utilities. New York and Maryland have joined the program.

The main objectives of MTRP are to create an awareness among community leaders of the importance of trees in their communities and the need to undertake a comprehensive tree-care program. The program was initiated in the participating utilities' service areas through three types of two-day workshops. The first type of workshop consisted of intensive training in urban forestry for utility and bureau foresters. Six such workshops were conducted in Pennsylvania, New York, and Maryland. The second type of workshop was designed for community leaders, shade-tree commissioners, and other interested persons. The subject matter of these workshops consisted of background information on the importance of urban forestry, the fundamentals of a sound shade-tree program such as proper selection of tree species and cultivars (cultivated variety), correct planting procedures and the importance of maintenance, and information on where to get assistance. Nine such workshops have been held in the three states. A third type of workshop on the use of cultivars as street trees was offered twice to anyone interested. More than 300 people have now been exposed to the specifics of urban forestry through these workshops.

The next step in the program is to work directly with the community contacts made at these workshops and help them initiate projects in their communities. A typical project usually starts with a street-tree inventory and the development of a tree replacement plan. The next step is to select the correct species or cultivars for a given location. Correct planting procedures and the need to undertake a maintenance program are emphasized. Tree-planting plans are usually prepared by the service foresters and utility foresters in consultation with the community contacts. In communities in which utilities have provided funding, 50 replacement trees are provided for planting under utility lines. The community selects 25 trees of one cultivar of a species and 25 trees of another

cultivar of the same species. It is the responsibility of the community to plant the trees properly.

The reason 25 trees of 2 separate cultivars are planted per community is to provide the basis for a statistically valid comparison. Data are collected from these trees right after planting and on a yearly basis. As more and more cultivars are planted across the state, considerable information will be gathered on their performance in urban environments. This information will enable those responsible for urban tree planting to select cultivars better suited for street trees.

Since the program was started 3 years ago, 18 communities in Pennsylvania and 1 each in New York and Maryland have planted performance tests of 50 trees in each community. The following species and their cultivars are being tested: Amelanchier Cumulus, Robin Hill, Spring Tyme, and Tradition; Crataegus Crusader and Ohio Pioneer; Malus Brandywine, Centurion, Harvest Gold, Madona, Spring Snow, and Sugar Tyme; Prunus hillieri Spire; Prunus sargenti Columnaris; Pyrus calleryana Aristocrat, Autumn Blaze, Bradford, Cleverland Select, Red Spire, and White House; and Syringa amurensis Ivory Silk and Summer Snow. Although it is too early to draw any conclusions on any of the cultivars, differences have been noted that will undoubtedly be beneficial in future plantings. Survival and care of the trees have been excellent everywhere. Compilations and evaluations from these tests over the next several years should enable urban foresters to do a much better job in matching cultivars to site requirements.

More than 60 communities have become involved in MTRP. Additional test plantings will be made as funding from the utilities continues. The program has been most successful in communities in which individuals have taken the lead and pursued the program with local government officials.

Another significant accomplishment of the program was the development of a notebook on street-tree cultivars. Five states, the U.S. Forest Service, and Penn State University collaborated on this venture. The notebook consists of a set of 122 street-tree factsheets illustrated in color. The notebook has proven to be extremely valuable to service and utility foresters as they work with communities in developing a street-tree planting plan. The notebook is for sale by the Agricultural Publications Department at Penn State.

The cultivar factsheets in the notebook contain the following information for each cultivar: patent or trademark; height and width at maturity; hardiness zone; information on crown, foliage, flowers, and fruit; description; advantages and limitations of the tree; and site and culture requirements. Cultivar information is also included when the factsheet is on a species. Each factsheet is color coded for suitability of the cultivar under electric lines, and each sheet contains one to three color plates. One large plate shows the tree at or near maturity; the other plates show specific features of the cultivar, such as flower color, fall foliage, or fruit.

The outlook for accomplishing the objectives of the program is most encouraging. Many of the communities that have participated in the program have now qualified as Tree Cities USA, a program administered by the National Arbor Day Foundation. The overall results of the program are community pride, healthier trees in Pennsylvania communities, and a safer roadside environment for pedestrians and motorists alike.

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