

CHALLENGES OF MUNICIPAL ARBORICULTURE¹

by Carl Jorgensen, City Arborist

Abstract. Municipal arboriculture encompasses four principal objectives: 1) quality tree planting programs as growth of a city occurs, 2) preservation of existing trees, 3) maintenance of trees on the public right-of-way and city properties, and 4) education of the general public as to the value of trees. Varying approaches to these four objectives and the means of carrying them out are presented. Effective implementation of the objectives depends on a workable tree ordinance.

Administration and programs of municipal arboriculture vary greatly throughout the United States and indeed the world. Many factors enter into such programs. The community may be so small that a professional arborist or a separate tree division is impractical. The climate and soil factors can vary from excellent for a broad spectrum of trees and shrubs to one permitting only one or two species. In Colorado, precious water must be diverted from top priority domestic use to landscape use, which has a lower priority. We are therefore looking more and more to drought tolerant species. Community pride and interest play a part. Budgetary considerations may place landscaping and beautification with a lower priority than such essential services as utilities, fire and police protection. The character of the community can determine the quality of the program. It is usually better where a large majority of the residents are home owners. These and other factors must certainly be taken into consideration when establishing and administering a municipal tree program.

Perhaps it is best at this point to describe our municipality. Fort Collins, a city of 55,000 people, is situated on the edge of the high plains at the foot of the Rockies. Our climate is characterized by having great temperature variations. Summer temperatures are often in the 90's, while winters fluctuate between mild spells and severe cold, down into the minus 20's. Nighttime temperatures are often 40 degrees colder than day highs. Severe freezes can occur in early fall and late spring. Our yearly precipitation is a scant 15 inches, with one-third coming as heavy down-

pours in April and May. Heavy limb-breaking snows can come in early fall or late spring when foliage is on the trees. Summers are generally hot, sunny and dry. Relative humidities are low. Winters are sunny with the same dry atmosphere, often punctuated by high winds which suck remaining moisture from a soil devoid of snow cover. Soils are generally high in nutrients, low in organic matter, and the soil reaction is alkaline. Soils are heavy, hard to cultivate and water intake is slow. We have certain advantages. Mountain snow melt provides a source of water with which we can water our broad spectrum of trees and shrubs during periods of drought. High light intensity encourages rapid food manufacture by plants, resulting in fast healthy growth, good storage and excellent bloom. The dry climate discourages disease and insect pests. Severe winter cold and drought kills countless overwintering insects and many weeds.

We have approximately 60,000 trees within the City limits of which 4,000 are American elm. Honeylocust, hackberry, cottonwood and green ash are other dominant deciduous species. Junipers, spruce and pine are the prominent evergreen species. The principal ornamental tree is the flowering crab. Unfortunately we also have many Siberian elm (*U. pumila*) which spring up everywhere and grow rapidly. The core city contains many magnificent American elms and green ash planted at the turn of the century. These we are gradually losing to senescence, disease or other casualty. Being a university town, we have a high percentage of residents who are college graduates, who own their own home and can probably be best described as middle-class Americans. They are sympathetic to the tree program and support it.

¹. Presented at the 52nd Annual Convention of the International Society of Arboriculture in St. Louis, Missouri in August of 1976.

Selling the Program

While I do not believe I have to convince this audience of the value of trees in the community, I should like to reaffirm the concept that trees are worth all the effort we can exert in promoting their value to the general public. Since different approaches appeal to different people, we use mainly three and admit that they may or may not work in your municipality.

1. *The aesthetic or historic approach.* We recognize that we enjoy the labors of foresighted citizens who many years ago planted their yards and public areas to trees and shrubs. The result was the transformation of a treeless prairie town into one with shade-lined streets and parks. Some landmark trees still survive. This heritage can and must be preserved. As informed and concerned citizens, we cannot merely reap the benefits of trees planted by these pioneers. Our task is to promote new plantings in our ever expanding community. We must be committed to replacing those trees which have already died or have passed their prime with trees that will shade present and future citizens of Fort Collins. At the same time we must plant the new subdivisions, parks and medians to the same level of excellence as the core city. Architecturally, landscaping softens the harsh building or street lines and creates vistas of beauty in an otherwise sterile environment.

2. *The economic or practical approach.* Residential, business and industrial property appreciates in value with good landscaping. The National Real Estate Board, some years ago, informed us that landscaped property had a resale value 13% greater than the same properties without landscaping.

Unlike coal, oil or minerals which once used are gone forever, trees are a renewable resource. Instead of diminishing they increase in value for many years after planting. They create a more enticing city. They can make asphalt deserts into attractive parking lots, screen junkyards and ugly views and soften otherwise bleak newer residential subdivisions. Industry recognized that employees are happier and do better work when they labor in landscaped surroundings. Greenbelts can buffer residential areas from

commercial or industrial zones. We can encourage more planting of trees by increasing building set-backs. We can provide planted open space and park space in newer annexations. We can plant medians and center parkways. We can insist that planned unit developments and business developments have a degree of landscaping at least equal to that of the traditional single family, single lot concept.

3. *The environmental approach.* Trees and plants provide the very oxygen we breathe and raise the relative humidity to a comfortable level in dry climates such as ours. By reducing wind, plants can raise the temperature of our surroundings in winter while providing cooling shade in summer. Energy needs are thus lessened year round. Plants act as valuable smog, smoke and pollutant filters. They lessen noise pollution. Properly planted, they can make our streets and highways safer. These and many other viable reasons compel us to plant trees and other plants in our cities.

Objectives of Municipal Arboriculture

Each municipality will have to determine its own goals and objectives. In Fort Collins we feel our tree and landscape program encompasses these four principal objectives:

1. *To promote quality tree and shrub plantings on all city properties (parks, cemeteries, golf courses, medians and mini-parks) commensurate with city growth and within the restraints of environment and realistic budget.*

2. *To preserve existing trees and plantings under the regulatory powers of our tree ordinance.*

3. *To maintain and prune existing trees on the public right-of-way and city properties, and to replace senescent trees and those lost to disease or other casualty.*

4. *To further the above by an active educational and public relations program.*

I should like to expand on each of these and explain how these objectives are implemented in our community.

New Tree Plantings

Fort Collins is a rapidly growing city, in fact we are the fourth fastest growing urban area in the

United States. Our total urban acreage in 1970 was 6,734. At the beginning of 1976 new annexations had increased this acreage to 10,573, an increase of 63%. Our 1970 shade tree density was slightly over 7 trees per acre. In order to maintain that density in new annexations we would have to plant approximately 27,000 trees on public and private property. Since 20% of the total is in parks and street trees this would mean 5,400 new trees coming under our jurisdiction. However, since at present, home owners and developers are responsible for new trees planted on the public right-of-way abutting their property, we set a minimum goal of 500 caliper-sized trees per year on city-owned property. The deciduous trees are primarily honeylocust, hackberry and green ash. All have a minimum caliper of 2" and are planted with a ball of soil. We use juniper, spruce and pine liberally since all are drought tolerant species. Upright evergreens must be 5' in height and are also balled. We believe these sizes are necessary to make an immediate showing and reduce non-malicious damage to a minimum.

We will continue to purchase 200 of that total each year from commercial sources. The balance will come from our own nurseries and be moved with our Vermeer 44. We have one large tree nursery and two smaller ones. The total capacity is 4,000 trees. With the scarcity or unavailability of some species and sizes, plus higher costs and transportation, we feel justified in having our own nurseries. One added benefit is the high survival rate of trees moved directly from the nursery to the planting site. We buy bare-root lining out stock from commercial nurseries and some planting is contracted out.

Preservation of Existing Trees

Recognizing the harsh environment for the growth and development of trees in the Rocky Mountain West, we are perhaps more sensitive to preservation than other geographical regions with heavily vegetated surroundings.

Prior to the ordinance revision in 1971, indiscriminate removal and damage to large healthy trees by contractors and others was common. We now require permits for such

removals or limb pruning and there must be compelling reasons for the removal. We require protection for existing trees during construction. Existing trees must be shown on proposed landscape plans. Often slight rearrangement of structures, drives and walks can save valuable trees. Where removals are unavoidable, we require compensating new plantings. In addition, our tree crews are constantly inspecting private and public trees with respect to street and sidewalk clearance, and the elimination of traffic or pedestrian hazards due to improper plantings.

An effective sanitation program requires removal of diseased trees, dead or dying limbs, and a constant survey and sampling of trees with disease symptoms. We have been able to keep Dutch Elm Disease losses to tolerable limits. Since 1971, we have lost 269 out of 4,000 American Elm. We require immediate removal of positive D.E.D. trees, including stumps. We have cooperated with the United States and State Forest Service in a beetle trapping program involving pheromones. We have been unsuccessful in the use of benomyl. We do not spray for the elm bark beetle on city properties. This spring we released several thousand parasitic wasps for beetle control. Since there are no natural stands of American elm we have an advantage over our eastern arborists in the control of Dutch Elm Disease.

Maintenance of Existing Trees

There are at least two philosophies of responsibility for street trees on the public right-of-way. One places all responsibility for planting and maintenance on the city. The other, the position our ordinance takes, places the responsibility on the property owner for all plantings abutting the private property. There are advantages and disadvantages to each (might be the subject of an article in the Journal or debate at some future I.S.A. convention). Suffice it to say that with licensed commercial arborists doing professional quality work, both individuals and the city should use them to the fullest. Since responsibility for trees and plants on the right-of-way rests with the property owner in Fort Collins, we survey and send notices of work to be done. We send

between 400 and 500 such legal notices annually. Generally we request that the work be done within 30 days and that it be done by a licensed arborist. We are the licensing agent for such arborists and regulate the work done by them for both private citizens and the city. Our goal is to maintenance-prune every tree on city-owned property (parks, golf courses, etc.) every three years. While we do contract for much of this pruning, our tree crews are also kept busy during otherwise slack periods in fall and winter. We replace senescent trees and those lost to casualty or disease. Maintenance also involves the normal transplanting procedures and the subsequent care such as watering and spraying during the establishment period.

Education and Public Relations

Any program of municipal arboriculture must have the solid backing of the community. This requires constant public education on the valuable asset they have in their trees and the importance of protecting and extending landscape plantings. We use the news and radio media to regularly discuss tree care, D.E.D., acceptable species, etc. We set aside an entire week in April as Arbor Week and make presentations to elementary schools and civic clubs. We are particularly interested in developing an appreciation for trees in the school child, and have yearly put together a slide and tape program for this purpose. Many schools have established their own nature centers as a result of this indoctrination. In 1975 over \$5,000 was contributed by citizens and groups for the establishment of an arboretum and an adjacent mini-park. Our new arboretum is primarily an educational tool, permitting the citizens to see and identify trees, evergreens and shrubs that will grow in our area. We, of course, have available brochures on trees, proper species and planting and pruning procedures, a condensed version of our tree and shrub regulations and landscape requirements. Legal notices appear in the news media reminding citizens of their

responsibility for existing trees and warning of possible insect or disease attacks. Our office is ready to advise on the numerous phone calls we receive concerning trees and plants.

Last year we answered over 2,000 such calls. We also make home calls as time, need and personnel permit.

We have an excellent tree ordinance, and without one no municipal arborist can really effectively operate. Obviously a legalistic approach to carrying out such an ordinance would be the worst possible modus operandi. Rather, the best results occur when the arborist and his personnel take the helpful, informative approach. We must assume that most violations are unintentional. People are anxious to do what is right. Our function is to educate them as to what is right. We firmly carry out the provisions of the ordinance in the friendliest manner possible.

Finally, in order to promote high quality, aesthetic beauty and uniformity of plantings throughout the community, the city arborist sits in on conceptual review, staff review and planning and zoning board meetings. He reviews all landscape plans for new plantings on public rights-of-way, parks, planned unit developments and commercial or highway business. His final approval of such plans is required before they go to the City Council. This measurably improves the overall quality, variety and quantity of those trees and ornamentals regarded as suitable for our environment. It avoids costly errors that could increase the tax burden in future years.

I am sure you are wondering what such a program costs the citizen of our city. Apart from the expenditures made by the property owner, our program the last two years has cost a little less than \$2.00 per tree. We expect to hold to that figure in our projections for the next five years.

*Forestry Division
City of Fort Collins
Fort Collins, Colorado*
