

ARBORICULTURAL CHALLENGES IN UTAH¹

by Gary Merrill

Abstract: The arid desert environment of Utah makes trees a virtual necessity for comfortable survival. Limited availability of water has promoted urbanized population concentrations, with associated urban forests. The generally alkaline soils, combined with a climate of seasonal extremes, provides a real challenge to applied arboriculture in these urban forests. The Tree Care Program for Murray, Utah provides an example of the problems common to the entire state, and some of the solutions developed.

Utah is a state of wide environmental diversity. Much of Utah is arid, inhospitable desert, yet the larger mountain ranges have timber and are snow-laden throughout the winter. Unfortunately, there is seldom a natural gradual transition from desert to steep snow-capped mountains, with mountains rising abruptly from valley floors. Annual precipitation in the valleys is so low that the desert valleys have been converted to productive land only through irrigation systems fed by the mountain streams.

The dependence upon mountain snow-melt for available water has led to the development of population centers along the bases of the mountain ranges. The Wasatch Mountain Range, bordering the east side of the Salt Lake and Utah Valleys, overshadows 80% of the state's population. Communities in this increasingly urbanized area include the large cities of Salt Lake, Ogden, and Provo, as well as smaller suburban cities such as Murray, Bountiful, and Orem. Some semi-rural towns continue to resist urban encroachment, including American Fork, Layton, and Riverton, among others.

Although available mountain water has enabled desert land use, trees are vital to modify the desert climate, particularly in summer. Thus, trees are an integral part of life in Utah, whether they be in the downtown areas of Salt Lake City, or bordering the town square in the rural community of Newton. Caring for and improving these community trees throughout the state, with predominantly alkaline soils and climatic extremes, is the arboricultural challenge for Utahans.

One of the most critical challenges of arboriculture in Utah is public and industrial education. Much of Utah is gradually becoming familiar with the term and practices of arboriculture. Yet, much is left to be desired. Utah State University, in Logan, has an accredited School of Forestry, and a curriculum in Horticulture, but no classes in urban forestry or arboriculture. Landscape architects most closely resemble private urban forestry consultants, but most are uninvolved beyond park planning or individual private property beautification. An abundance of local tree service companies exist, but none has affiliation with the National Arborist Association, the American Society of Consulting Arborists, or the International Society of Arboriculture. Any of these organizations could supply more current information on proper pruning techniques than is obviously available now throughout the state. The few affiliates of national tree service firms that operate in Utah do express their better training in the work that they do.

Positive steps toward improved awareness and application of sound arboriculture have come primarily from municipal tree care programs. In most cases, such programs were initiated through active and aggressive participation by volunteer members of local shade tree commissions. As a result, many of the medium sized and larger communities have ongoing tree care programs. Salt Lake City, Ogden, and Provo are three of the largest cities, and each has an active and busy shade tree department. Some of the smaller communities, such as Springville, Brigham City, Pleasant Grove, Moab, and Cedar City, devote a concerted effort to the care and maintenance of their street and park trees. These and other communities coordinate their efforts by meeting twice annually as the Utah Association of Shade Tree Commissions (UASTC). Through educational presentations, and discussing problems and solutions, this organization has done much to further

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the cause of arboriculture in Utah. For many years the Association has maintained affiliation with the Western Chapter of the International Society of Arboriculture.

In addition, in recent years the Utah State Forester's Office has established an urban forestry technical assistance program. Through this program, many of the more rural communities have had exposure to the principles, techniques, and values of arboriculture.

Murray City — an example

As the Murray City Forester, my greatest familiarity is with Murray's Tree Care Program. Yet the contacts made through the UASTC have given me an awareness of the problems faced in communities throughout Utah. Murray provides an example of applied municipal arboriculture in Utah, with many of the problems and solutions common to communities throughout the state.

Murray has a population of 35,000 residents, and is located 10 miles south of Salt Lake City. I was hired in 1976 as the first city forester, thanks to sixteen years of work by the Shade Tree Commission to promote an arboricultural program for the city's trees.

Murray has its own Power Department, and prior to my employment had a 2-man tree crew with the sole responsibility of power line tree clearance. To avoid duplication of manpower and equipment, the City Forester position was placed in the Power Department as Supervisor of the Forestry Division, which now consists of 5 full-time employees, and one seasonal employee.

We remain responsible for power line clearance, but have the additional duties of street tree and park tree maintenance, Power Department and substation landscaping and grounds maintenance, and annual street tree planting program, Arbor Day activities, and tree-oriented needs of all the various other city departments. Our operating budget is approximately \$70,000.00.

There are several advantages to being associated with the Power Department. Although most utility rights-of-way run behind the homes, in some locations power lines conflict with street trees. Being responsible for the trees for both

beautification and line clearance, we make every effort to provide safe line clearances while considering the tree's aesthetic appearance. Our wire consciousness also influences the street tree planting program, so that where new street trees must be planted beneath power lines a lower growing species is selected that will not conflict in the future with existing overhead lines.

Working with energized conductors necessitates the use of electrically-safe, prime condition equipment. Thus, we have more elaborate equipment than would be possible for a separate shade tree department for a city of comparable size. We have exclusive use of a 1978 Asplundh 45' bucket truck, a dump truck with a chipper pulled behind, a stump-cutter, a pick-up truck, and a motorcycle. We also have access to additional Power Department equipment that would be unavailable otherwise, such as backhoes, extra bucket trucks and pick-ups, winch trucks, and flat-bed dump trucks.

Finally, power line tree trimming requires an organized safety and training program, which benefits the other phases of our work. I have established an Apprentice Arborist training program, in which all but one employee is mandatorially enrolled. The 2-year program combines the National Arborist Association's (NAA) Homestudy Courses in arboriculture with slide/cassette programs on tools and techniques, plus supplemental readings and tests specific to power line maintenance. The men have progress deadlines, and 85% or better is required to pass the tests. A 10% salary increase is gained over the length of completion, on top of cost-of-living. My foreman, Lynn Gillen, has finished the program, for which he received completion certificates from NAA as well as Murray City. In addition, the training program has been certified by the Utah State Apprenticeship Council, and Lynn is the only State certified Arborist in Utah.

This training program has made a tremendous difference in our operations and employee attitudes. The men enjoy knowing more about the trees than simply which one to trim next on the work schedule. They appreciate the increased emphasis on professionalism and safety, and have a higher esteem for this line of work. They unders-

tand how the quality of their work significantly impacts the appearance of the city, and they work hard to have a positive impact. The associated pay increases provide an incentive to remain with the Forestry Division.

From the employer's side, the investment is trivial compared to the benefits. For approximately \$200.00 per man over the two year period, work quality, efficiency, and safety is improved; crew member turn-over is reduced; and public satisfaction is greatly increased. We used to get letters of complaint. We now get letters of appreciation and commendation. I would recommend such a training program for any arboricultural outfit, whether the operations are commercial, municipal, or private in-house.

A well trained, well equipped work force enables us to most effectively meet our responsibilities. In some communities in Utah, obtaining such a work force is the biggest challenge. Some progress has been made in recent years with the willingness of some cities to send their tree crews to the UASTC meetings. The men profit from any training sessions given, and gain a greater appreciation of the overall goals of tree care programs.

Relative to work accomplishment, organization and record keeping are vital. As in many other parts of the country, the Murray Forestry Division's work scheduling is seasonally oriented for safety and efficiency. Records of each job are kept and evaluated to improve the program wherever possible.

Beginning with spring, the annual street tree planting program extends from late March through late May. In new subdivisions, we assess the developer for street trees prior to the beginning of construction. This assessment is currently \$15.00 per tree, for two trees per straight frontage lot, four trees per corner lot.

When the majority of homes on a given street are occupied, the Forestry Division plants the trees in the 5½ foot wide planting strips. This funding method enables city control over species and site selection, proper planting techniques, and insures tree lined streets for the future. The program relies upon the individual homeowner for watering, and has proven popular and successful

during the past two years since implementation.

Urban Utah continues to grow in population, supporting a tremendous industry in residential home construction. Treeless, agricultural lands are being converted to subdivisions throughout the state. In Murray alone there are at least 10 large, multi-phase subdivisions under development. Without an organized planting program, this results in miles of tree-barren streets.

To exemplify the rising rate of residential home completion, in 1977 we planted 100 trees. In 1978, nearly 500 trees were planted, and in 1979, over 800 trees were planted. Of these, 400 trees were planted by the high school football team in a special project to raise funds for new weight lifting equipment. All trees were 6-8 feet, established in cans. Species diversity is severely limited by seasonal climatic extremes and alkaline soil conditions. The most common species planted were Bradford pear (*Pyrus calleryana*), thornless honeylocust (*Gleditsia triacanthos 'inermis'*), Bechtel fruitless crabapple (*Malus sp.*), purple-leaf plum (*Prunus cerasifera*), columnar, Schwedleri, and Emerald Queen varieties of Norway maple (*Acer platanoides*), and Greenspire littleleaf linden (*Tilia cordata 'Greenspire'*).

Power line clearance is a year-around operation, but has almost exclusive emphasis from June through November. We attempt to prune "power line trees" on a preventative schedule prior to limb-wire contact. This increases safety over corrective pruning that removes limbs from contact with wires. It also enables greater flexibility in shaping the tree's crown. The advent of growth regulators may further improve the circumstances of this necessary operation.

To manage a community forest properly, you must know what you are working with. In the summer of 1978 an inventory was conducted of the 4800 street trees within the city at that time. This provided a great deal of information about the health and condition of individual trees as well as the species diversity, health, and condition of our overall community forest. Several other Utah communities have also conducted inventories, many with the help of the previously mentioned State Forestry Assistance Program.

The inventory data supported my general obser-

vations that existent insect and disease problems on Murray's public property trees did not warrant a pesticide spraying program. In this area of concern, different communities in Utah have different opinions, problems, and solutions. The aphids in Norway maples sprayed for in Salt Lake City are not prevalent in Murray. Sycamore anthracnose (*Gnomonia platani*) is occasionally serious, but most Sycamores (*Platanus occidentalis*) in Murray are on private property, unlike some other communities. A similar situation exists with European elm scale (*Gossyparia spuria*) on American elm (*Ulmus americana*).

The most devastating pest problem in Murray, and throughout much of urban Utah, is the loss of trees from borer infestation. Ash (*Fraxinus sp.*) have been eliminated from Murray's planting program due to mortality from the lilac borer (*Podosesia syringae*). Two other trees common to private property which have similar problems are the European white birch (*Betula pendula*) which is infested by the bronze birch borer, (*Agrilus anxius*) and the black locust (*Robinia pseudoacacia*) which is attacked by the locust borer (*Megacyllene robiniae*).

The only involvement in pest control that we have had to date took place this past spring. Utilizing pheromone traps deployed throughout the city, I was able to alert the general public to the proper time to spray for the lilac borer in ash for potentially maximum control. The news media gave excellent coverage of the information, including T.V. spots. Although I have no means of measuring how much spraying was done, commercial tree sprayers indicated an upsurge in business relative to this pest.

When the need is sufficient to warrant pesticide spraying, we will utilize materials available. Until then, this expense and the exposure of workers and residents to pesticides will be avoided by our Forestry Division.

Street trees must be trimmed and maintained for public safety as well as to maximize their beauty. In Murray, street tree maintenance pruning is scheduled from November through March. The lack of any previous organized program provided significant initial corrective pruning for street and sidewalk clearance. As this operation continues, young trees are pruned to promote more upright

growth which will avoid heavy corrective pruning in the future.

With the several pruning operations that we have, a tremendous amount of waste wood is generated. Wood that formerly was taken to a landfill is now stockpiled for firewood. Some firewood is distributed to the public at the job locations. Some larger logs have been sold to a furniture factory. I am still seeking sources for use of the 100 tons of wood chips produced annually.

Arbor Day in Utah is officially recognized each year by Gubernatorial Declaration as the last Friday in April. Many communities promote Arbor Day with tree planting ceremonies. The Salt Lake City Tribune is an avid supporter of this event in Salt Lake City.

Murray coordinates each year's Arbor Day Program with one of the city's seven elementary schools. Promoting student interest with a poster contest, and parental interest with student program participation (and refreshments), we have had many successful programs. The past two years' programs have been highlighted by consecutive Tree City USA awards from the National Arbor Day Foundation. The award has given great pride to city officials and residents, and excellent publicity for the Tree Care Program.

Finally, one of the most interesting aspects of my job as the Murray City Forester is informing the general public. Division operations are restricted to trees on public property or in power line rights-of-way, but I serve as a source of information to city residents for private property tree problems also. I have worked with homeowners, landscape architects and contractors, developers, and commercial tree service firms to improve applied arboriculture within Murray.

Conclusion

The Murray Tree Care Program exemplifies the diversity of activities present in applied arboriculture in Utah. Other communities may not yet be as concerned or involved, but they will be soon. Trends indicate continued urbanization. The future public will still seek beautiful parks and streets to modify their environment. To meet this demand, municipal forestry programs must be educated, progressive, and efficient.

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