

ARBORICULTURAL COMMUNICATION¹

by John W. Andresen and Erik Jorgensen

ABSTRACT: To determine arboricultural information needs and resources within the shade tree industry, 2100 questionnaires were mailed to the membership of the International Shade Tree Conference in June 1973. Of the 328 total respondents 32% identified themselves as commercial arborists. An additional 17% associated themselves with other arboricultural affiliations to raise the total to 55%. The remaining 45% assorted themselves within a dozen other urban vegetation management disciplines. Of 12 possible choices, information about tree maintenance, and insect and disease controls was listed as a primary concern by the respondents. As reported, the largest number of contacts for information (18 choices) was made with county extension agents, product dealers or suppliers, and the ISTC. An analysis of and recommendations for more effective information exchange is provided.

Knowledge, to be effective, must be shared.
M. R. Hopkins

Communications Needs

With some justification, there is a notion among arboricultural professionals that better means and ways should be provided to supply information related to the solution of their shade tree and ancillary problems (Andresen 1973a). Commercial, municipal, and utility arborists, urban foresters, and other urban vegetation management specialists feel that communication between the scientist-researcher and the practitioner-user is falling short of effective information dissemination and exchange.

During his introductory remarks at the first New Horizons' Day held in Toronto, Horticultural Research Institute President, Evert Asjes, III (1974) commented on the long term-lag between the completion of a research project and transfer of the data to the ultimate user. He emphasized that there is an urgent need for better communication between the researcher and the nurseryman. A better information exchange system is required to advise the field man of current research results.

To establish current information needs and resources and to assess distribution of arboricultural information and delivery of technical communication, the membership of the International Shade Tree Conference, Inc. (ISTC) was asked to respond to a structured questionnaire. The present authors were concerned with individual member's type of employment, information he requires for his professional activities, and information contact sources he uses to gain assistance or data. Statistics provided by our colleagues, through questionnaire response, aided in an assay of public and private information system used by the ISTC membership for receipt of information.

The remainder of this paper outlines several communications concepts and problems, summarizes results of 382 returned questionnaires, and offers several recommendations to improve communications exchange within the arboricultural profession.

Communicate to Motivate

"Communicate effectively or perish on the vine." This was Dean Sylvan Wittwer's warning to his fellow horticulturists in a recent issue of HortScience (1973). The same admonition applies to arboricultural scientists and their counterpart arborists, urban foresters, and other vegetation management practitioners who work with trees and tree related problems, especially in metropolitan areas. Wittwer's major contentions were that research results were reported ineffectively; there has been slow response to the needs of new horticultural audiences (in the present case, urban foresters); innovation is hide-bound by administrators and scientists secure in their academic positions; and substantial, financial investments in horticultural research are not being returned to the using

1. Presented by Dr. Andresen at the 50th International Shade Tree Conference in Atlanta, Georgia in August 1974.

public via effective communication. This accountability discrepancy that confounds a balanced input-output ratio for research funding was carefully reviewed by Hightower (1972) and summarized by Andresen (1973b).

Maxie (1972) was also concerned with inadequate communication when he wrote "The world seems to have crept by, unnoticed, while many horticulturists stand resolutely facing the past. Members of the American Society for Horticultural Science continue to speak to and write for one another while their officials scurry about trying to raise funds to pay for the privilege." (Unless we in the ISTC are alert to change we may also have to ask the question, which was the title of Maxie's paper "Where was the ASHS (ISTC) when the world went by?").

Information exchange, especially between researchers and practitioners is often tenuous and at most times difficult (Hopkins 1961). In some instances, fortunately, the communications gap is narrowed by an intermediate relay—the extension forestry or ornamental horticultural specialist, the metro or urban forester, or the industrial sales representative. But most communication attempts are direct through a publications medium. The goal of the communicator, using the printed word and other communications media, is to transmit concise, timely, and usable messages to the receiver.

Role of the ISTC

The foregoing premise, then, leads to the query, *how successful is communication in the arboricultural profession and sciences?*

This question was transposed into a prime objective of the Urban Forestry Committee, ISTC. When immediate Past President John A. Weidhaas, Jr., established the Committee in May, 1973, Dr. Weidhaas specifically charged the Committee (composed of R.S. Dewers, T.J. Haskell, E. Jorgensen, G. King, J.T. Oates, E.G. Rex, J.R. Rogers, and J.W. Andresen, Chairman) to accomplish the following tasks:

1. Determine the current sources of technical information and assistance utilized by arborists.

2. Define the scope and technical proficiencies provided by urban foresters, arborists, landscape architects, urban planners, horticulturists, and other technical specialists.
3. Define urban forestry, arboriculture, urban horticulture and any other related, appropriate disciplines, as well as prerequisite training and qualification for the foregoing.
4. Provide recommendations as to how ISTC can play a major role in promoting local, state, and federal programs of shade tree care, research, formal and adult education.

Assignments 1 and 4 definitely are communications directed and 2 and 3 will depend upon communications between related disciplines.

Prior to the formation of the Urban Forestry Committee, Andresen (1973b) searched for an indication of practical information needs at the field level. In 1972 and 1973, he interviewed a representative sample of city foresters and arborists throughout the United States and in eight northern European countries. In general, the consensus opinion was that practical, up-to-date information as to how to solve local problems was urgently needed. This general observation is probably due to 1) information lacking, 2) information dated, or 3) information difficult to obtain.

Survey Results

Of the 2100 questionnaires enclosed with the June 1973 mailing of *Arborist's News* and addressed to the general membership of the International Shade Tree Conference a total of 382 returns were received, or a rate of 18.2%. In addition, 30 respondents included pertinent remarks concerning their opinions to enhance arboricultural communications.

As indicated, 115 commercial arborists in the U. S., or 32% of the total constituted the major respondent group. If all those identifying with the title arborist (commercial, municipal and utility) are tallied the percentage equals 55%. Those listing "other" as an employment category included titles as "arboretum director, agricultural chemist, cemetery manager, con

sulting forester, manufacturer and planner".

Returns from international and at-large members also revealed that commercial arborists were in preponderance but in contrast to those from the U. S., educators, park managers, and landscapers assumed higher return percentages than other listed arborists' categories.

Plant maintenance and care coupled with insect and disease control information were rated as *most important* by the majority of the respondents. Utility arborists considered pruning and "other" (line clearance; tree growth inhibitors; tree trimming and herbicides; and right-of-way clearing and maintenance) information as most relevant. Planting and transplanting information was *important* to 14 of the 15 user groups followed closely by insect and disease control. Information considered to be of *minor importance* included plant propagation and production, plant breeding and selection, pruning, cabling and surgery, equipment and supplies, and training courses for employees.

Listed under "other" information required were the following subjects.:

1. Arboretum planning and planting.
2. Diagnostic keys to tree problems.
3. Environmental planning.
4. Environmental values of trees.
5. How to avoid political conflicts.
6. Landscape design and planning.
7. Latest sources of literature and arboricultural books.
8. How to conduct educational and sales meetings.
9. OSHA.
10. Laws and other legislation relevant to arboriculture.
11. Shade tree valuation and damage appraisal.
12. Professional arborist consultation.
13. Weed and vegetation controls.

County extension agents and product dealers or suppliers followed by the International Shade Tree Conference were primary sources of information contact. Highest ranking sources contacted 5 to 10 times a year, were the county extension agent and product dealer or supplier but in this instance followed by university horticulture departments and state extension horticulturalists. Information sources used 1 to

4 times per year were led by the International Shade Tree Conference, state extension entomologists, and county extension agents.

Agencies or organizations not consulted by our respondents included the Federal Extension Service in Washington, the American Horticultural Society, and State and Private Forestry Division of the Forest Service, USDA.

Additional sources of domestic information as listed by our respondents were:

1. American Association of Nurserymen
2. Bartlett Tree Research Laboratories
3. City forester
4. Illinois Natural History Survey
5. Local arborists' associations
6. National Park Service
7. USDA agencies
8. Society of American Foresters
9. State soil and water conservation agencies
10. Trade magazines
11. Tree nurseries
12. Arboreta

Several information contact sources used by members-at-large were the Royal Botanic Gardens at Sidney, Australia; in England local urban and county authorities, and the Association of Tree Surgeons and Arborists.

Comments from our respondents appropriate to the improvement of information dissemination were numerous and varied so to consolidate space are summarized in the following ten composite observations ranked in order of frequency of respondents return:

1. There is a need for an international arboricultural news letter of wide subject matter coverage that would include current events, forthcoming workshops and meetings, current literature and book reviews.

2. To retain professional competence, training workshops emphasizing new arboricultural techniques and diagnostic clinics should be held on a frequent and scheduled regional basis.

3. Training manuals and guides plus an overall urban forestry or related textbook are needed.

4. To cope with increasing demands for managerial skills there is need for short courses concerning the improvement of business management and public relations skills.

5. Greater public awareness and confidence in arboricultural skills is required, so informational directives relating to legislative techniques to promote certified or registered arborist laws are needed. Also more reports on professionalism and enforceable ethical behavior are requested.

6. Reliable individual and collective economic statistics applying to the shade tree industry are not only necessary but essential to future growth and planning. (In fact, vital statistics are non-existent.)

7. More and better guidance and information is requested from cooperative extension personnel and foresters of state and provincial conservation agencies.

8. Basic and applied information describing arboricultural preventative maintenance techniques based on proven ecological data is in need.

9. Descriptions and listings of current arboricultural research programs would be useful.

10. Uniform federal and state or provincial plant registration and certification listings are needed.

At-large members made similar recommendations to the foregoing but emphasized a need for more American information and correspondingly an international information exchange.

Discussion

The questionnaire return rate of 18.2% was somewhat less than desired, but since it was a broad sample of the major professional groups within the ISTC and the majority of the returned questionnaires were complete in their responses to individual questions, we felt we had enough data to compile a meaningful analysis of arboricultural information needs. Neely and Himelick (1971) had more success (45% return) when they surveyed the activities of commercial arborists in the Midwest. They had three advantages: personal acquaintance with a group of known employment; a more workable sample (125 total questionnaires sent); and questions with definitive answers.

Low response to our questionnaire might in general be attributed to its distribution in June

and July. This is a very busy time for many arborists who probably would have otherwise responded.

It is worth reiterating that the most important information required by our respondents concerns itself with plant maintenance and care plus insect and disease control. Under the environmental stresses created by urbanization, metropolitan and suburban trees are suffering and will continue to suffer from years of accelerating debilitation pressure. Environmental changes are gradual and difficult to observe until a disaster point is reached. This fact coupled with a time lag before trees show measurable symptoms means that extra effort must be applied to maintain existing and establish new trees. It seems that communication about stress pathology is a prime requisite at the present time. Such information exchange involves knowledge of the treatment and maintenance of trees rendered especially susceptible to disease and insect attack because of the trees' physiological weakness.

Information categories listed as most important or important would assume even larger relative values if, as Neely and Himelick (1971) scored importance rankings, a weighting factor were applied based on percentage returns.

A number of those information disseminators listed but not solicited by our respondents may want to reconsider their data release methods and techniques. Most of the larger universities and public agencies concerned with natural resources have, for the past several years, placed additional emphasis on community or local services. It is obvious, however, that county extension agents, product dealers, and the ISTC provide most of the data needed by arborists.

There is little if any need for duplication of effort but we are certain that the many agencies involved in arboriculture, ornamental horticulture, urban forestry and related disciplines can contribute new or consolidated information that would complement existing data.

To avoid some possible communications problems relating to the above we could profit from the studies of our colleagues in the com-

munications sciences.

Communicating with one another within a tradition-bound discipline as arboriculture is often difficult, but communicating across disciplinary boundaries is often awkward, hazardous and at times impossible (Thayer 1967). Thus, arborist can usually converse with arborist, arborist and plant pathologist may have some difficulty, but arborist and urban planner may use two distinct vocabularies. Technical language barriers, as arboriculture becomes more interdisciplinary, are likely to increase rather than diminish unless scientists, practitioners and the public develop more effective methods of communication.

Technical jargon can be relegated to its rightful place—a means of accurate and rapid communication within a particular stratum of specialists, but for universal understanding within a particular linguistic block, common language, easily understood by the average person must be used. As Hopkins (1961) observed:

“Knowledge then is not a purely personal or private matter and communication is of vital importance. Communication is by no means a trivial or passive process involving the effortless transmission from a disinterested sender to an equally disinterested receiver. On the contrary, both sender and receiver are the fullest extent involved, the obligation being in the one to convince, and on the other to understand.”

At this point it is appropriate to expand upon the “comments” included with our questionnaire responses. Although all were timely, newsletters, short courses, and training manuals warrant principle elaboration.

Newsletters. Our review of current available literature revealed that there are numerous, albeit scattered news items that periodically appear in a broad array of publications. Among the more important serials that have relevance to arboricultural practices, the shade tree industry, and urban forestry are *Weeds, Trees and Turf, Grounds Maintenance, American Nurseryman, HortScience* (including book reviews and current literature), a number of botanical garden and arboretum journals plus the *Arboretum and Botanical Garden Bulletin*, and the news notes distributed by the F. A. Bartlett

Tree Expert Co. and the Davey Tree Expert Co.

Also of value are the *British Arboricultural Association Journal*, its accompanying *Arboricultural Association News*, and proceedings and reports of various international arboriculture and related programs and symposia. Of primary domestic importance would be our own *Arborist's News* the *Annual Proceedings of the International Shade Tree Conference*, proceedings of the 7 ISTC chapter meetings and on the Canadian scene the *Annual Yearbook of the Ontario Shade Tree Council* plus its quarterly *OSTC Newsletter*. Of regional value is “The Shade Tree” published by the New Jersey Federation of Shade Tree Commissions. The Commissions' Annual meeting proceedings also incorporate timely research and observational reports.

In addition to the foregoing, 3 monthly abstracting and review compendia that garner international arboricultural literature are the *Bibliography of Agriculture, Forestry Abstracts* and *Horticultural Abstracts*. These bibliographical publications are compiled from the vast array of journal literature and individual bulletins and notes distributed by the Agricultural Experiment Stations and Cooperative Extension Services of the American states and its Federal government. Parallel literature from other parts of the world is also gleaned.

It is our observation that arboricultural news items and literature are abundant but it may take prohibitive effort and time to obtain and compile significant items.

Ancillary to the foregoing, in the near future the Forest Service, USDA will release a 210 page annotated bibliography which includes 2300 citations relating to the management of urban vegetation. The period covered begins in 1963 (the renaissance of interest in arboriculture prompted by beautification and urban renewal programs) and ends in mid-1973. Continuing search of literature reveals a monthly increase of 50 to 100 books, bulletins, and articles or an annual increment of 600 to 1200 new “bits” of information that is in need of periodic compilation and summarization.

Short Courses. Since 1971 and in addition to the long established annual workshops and short courses sponsored by state organizations in Ohio, Massachusetts, New Jersey, California and others there has been an increasing number of conferences, meetings, and symposia focusing greater and more sophisticated attention on urban vegetation management problems and solutions. Precursory to the wave of neo-druidism, it may be recalled, were the Lockwood Conference on the Suburban Forest and Ecology in 1962 at New Haven, Connecticut and the 1965 White House Conference on Natural Beauty in Washington, D.C.

Further workshops are being planned but there still is a lack of information exchange between meeting sponsors and the general arboricultural—urban forestry sector. Clientele in an immediate regional area are informed but those who have an interest but are geographically remote are poorly or uninformed.

Training Manuals. One of the earlier (and now in revised form) training manuals issued as an extension course was (is) sponsored by the National Arborist Association to accompany its "Professional Home Study Program". A number of city forestry organizations have used the NAA lesson plans to advantage.

Recently, the Florida Division of Forestry (1973) has developed a 101 page "Urban Forestry Handbook" which promises to be precedential for new state manuals. Alabama, Colorado, Georgia, Kansas, and Missouri, as well as other states with emerging urban forestry programs are now revising existing guides or preparing more comprehensive handbooks. The scope of these guides is broad enough to have high relevancy to arboricultural practices in general. In addition, the State and Private Forestry Division of the Federal Forest Service is now preparing an outline manual to assist state foresters and others to prepare urban vegetation management manuals. The Federal Extension Service is also preparing guidance materials. also preparing guidance materials.

Although not for public distribution, excellent training and maintenance handbooks have been developed by the Asplundh, Davey, and F.A. Bartlett Tree Expert Companies.

Ontario Hydro incorporates utility arboricultural data within its six volumes of Forestry Reference Manuals.

Also, a number of the larger cities in America, Canada, and Europe have developed training manuals to assist personnel in their municipal arboriculture and urban forestry activities. As example, the Chicago Bureau of Forestry, Parkways and Beautification uses a well documented training manual supplemented by monthly bulletins and primers.

At present, Pirone's (1972) "Tree Maintenance" is of prime value to the practicing arborist but his book and similar publications do not include pertinent business, personnel or public management information. Although several authors are promising to write a comprehensive text none is really underway.

Business Management Instruction. Arborists located in proximity to any one of the thousands of community, junior or senior colleges found throughout the United State and Canada should be able to take evening courses in principles of business management, public speaking, and public relations. After learning the fundamentals they could keep abreast of new developments by subscribing to the journals attendant to managerial sciences. A number of the arboricultural journals and magazines listed earlier also carry frequent articles on applied business management and public relations studies.

Certified or Registered Arborists. Many of our colleagues (as well as the present authors) are concerned with a genuine professional image and accompanying high quality service to the using public and information relating thereto. Unfortunately, enforceable licensing legislation at the state or local level is rare to non-existent. Examples of case histories in achieving passage of relevant laws are also scarce.

If there is enough concern by practicing arborists for information about legislation perhaps the ISTC Urban Forestry Committee or an *ad hoc* committee appointed by our National Officers could assemble a legislative guide including case histories and examples.

Arboricultural Economics. Up to the present

time reliable statistics and information evaluating the annual gross and net worth of the shade tree industry have been lacking. Expenditure and income data, the net worth of arboricultural companies as well as the value of the services they perform are available on an individual basis but have not been compiled. A work project is needed to assemble economic data. Current information is overly conservative in its estimates. The shade tree industry, for many reasons, needs accurate contemporary and continuous economic information.

Extension Services. Both the cooperative extension service and state forestry organizations, who in the past devoted most of their attention to rural assistance and information activities are just about ready to provide new and substantial service to the arboricultural community. At the federal level, extension foresters, horticulturists, pathologists and entomologists will soon relay guidelines to their field constituencies about new programs to aid the shade tree industry and others concerned with urban vegetation problems. Parallel and complimentary to the extension service's new programs, the Office of Cooperative Forest Management of the Federal Forest Service is also preparing guides to advise and train directors of urban forestry. Shortly there should be ample assistance for those who request it.

Ecological Arboriculture. New research and educational programs concerned with environmental forestry, environmental horticulture and urban botany (all concerned with minimum maintenance by using native hardy plants) are accumulating an array of valuable data that will be available in printed form to the arborist and manager of urban vegetation. Several good texts relate the role of urbanization to plant growth.

Arboricultural Research. On-going shade tree and related research is well documented via the Smithsonian Science Information Exchange or the Current Research Information System of the U. S. Department of Agriculture. For a nominal charge, or gratis to a cooperating researcher, information can be retrieved to help determine existing research projects and programs. To

strengthen both systems, however, those researchers not contributing data about their work must be encouraged to do so to form a more perfect system—probably 30% of contemporary arboricultural programs are not centrally filed.

Plant Material Certification. The problem of gaining information about new plant material that may or may not be listed as patented varieties or registered cultivars is difficult. Conflicting rules of botanical nomenclature, contradictory registration lists dependent upon geographical region create problems. Lack of a nation-wide or international enforcement policy to assure accurate naming and identification of plant materials adds to the chaos. Perhaps the best source of data is the American Horticultural Society plant data-bank, but it requires universal support.

Recommendations

As the ISTC continues its vigorous growth in membership and expands its interests, we are provided with the challenge to acquire a new leadership role in managing urban and suburban vegetation.

Of immediate concern is the problem of initiating more explicit and universal information exchange. With the well distributed membership we have throughout Canada and the United States and with our at-large members many of whom belong to other arborists' groups there is little excuse for not assuming a strong position in response to the majority of the ten communications challenges enumerated earlier. The chapter and committee structure of the ISTC is admirably suited to meet the information needs of our own members and other urban vegetation managers. However, coordination at the National Headquarters level is essential to provide comprehensive and continuous communications coverage.

Specifically (and if so charged by our Executive Committee) the Urban Forestry Committee of the ISTC volunteers to solicit for and to assemble a periodic, current-events newsletter answering the needs of arborists, ornamental horticulturalists and urban for-

esters. A survey form will soon be mailed asking the membership for their needs and recommendations. The UFC will need a complete response to best prepare an adequate newsletter. As a suggestion, the proposed *Urban Forestry Fact Sheet* can be appended to or incorporated within our *Arborist's News*.

Further, and in cooperation with other agencies the ISTC can provide coordination and guidance for the establishment of short courses and training manuals for the arboricultural community.

In addition a thorough, detailed analysis of international arboricultural certification and registration can be accomplished by one of our ISTC committees.

Another relevant study within the province of our ISTC is to place an accurate value assessment on international arboricultural services.

The foregoing, we believe, are priority chal-

lenges because they can be accomplished within a reasonable length of time, will meet the communications needs of arborists and their co-workers, and only require a nominal fiscal expenditure. To meet our objectives, however, requires the concentrated efforts of our committee and the universal support of our membership.

The ISTC has the strength and resources to serve. With directed determination we will serve.

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Literature Cited

- Andresen, John W. 1973a. Approximately 100 individuals concerned with urban vegetation management were personally interviewed during the fall of 1972 and the winter and spring of 1973.
- _____. 1973b. *Status of research in the shade tree industry*. Int. Shade Tree Conf. Proc. 49: 1-12.
- Asjes, Evert, III. 1974. Introductory remarks given at New Horizons' Day of the Horticultural Research Institute annual meeting, Toronto, Canada.
- Florida Division of Forestry. 1973. *Urban Forestry Handbook*. Florida Dept. Agr. Consum. Serv., Div. For. 100 pp.
- Hightower, Jim. 1972. *Hard tomatoes, hardtimes. Preliminary report of the task force on the land grant college complex*. Agribusiness Accountability Project, Washington, D.C. 380 pp.
- Hopkins, M. R. 1961. *Information—an educational problem*, pp. 25-33. In: Williams, E.E. (Ed.). 1962. *The problem of communication*. Proc. Conf. Sci. Indust. Dept. Sci. Indust. Res. (Great Britain). 113 pp.
- Maxie, E. C. 1972. *Where was ASHS when the world went by?* HortScience 7 (3): 216-217.
- Neely, Dan and E. B. Himelick. 1971. *Activities of the commercial arborist*. Arborist's News 36 (5): 49-52.
- Pirone, P. P. 1972. *Tree maintenance*. 4th ed. Oxford Univ. Press, New York. 574 pp.
- Thayer, Lee (Ed.) 1967. *Communication theory and research*. Charles C. Thomas, Springfield, Illinois. 583 pp.
- Trowbridge, Alexander B. (Ed.). 1971. *Information technology*. The Conference Board, New York. 240 pp.
- Wittwer, S. H. 1973. *Communicate effectively or perish on the vine*. HortScience 8 (1): 10-12.