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Improving Urban Tree Care in the Great Plains: Impacts of the Nebraska Tree Care Workshops

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Abstract

Urban and community forests possess many benefits that enhance our quality of life. The Nebraska Tree Care Workshop is a tree care training program designed to enhance tree management in urban settings. This article describes the impacts that the workshop has had on Nebraska's community tree resources. Data was collected using a survey of past participants. The study found that creating a large cadre of people, well trained in tree selection and care, has had a positive impact on community tree resources across the state.

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Introduction

Nebraska is known primarily as a prairie state. Because of the severity of the Plains climate and the scarcity of original tree cover, establishing and maintaining a healthy urban "forest" in Nebraska is of considerable importance to the well-being of Nebraskans. With nearly all trees in Nebraska communities having been planted, developing and enhancing community-wide support for urban forests is an important component of a sustainable urban forest in this state and many others (Clark, Matheny, Cross, & Wake, 1997). The Nebraska Forest Service, the University of Nebraska Cooperative Extension, and the Nebraska Statewide Arboretum have conducted Nebraska Tree Care Workshops since 1991. The workshops are designed to enhance tree management capacity in Nebraska communities through research-based education.

The Nebraska Tree Care Workshop (TCW) is a 1-day training event for tree care and landscaping professionals and others interested in arboriculture. Six workshops held throughout the state each spring attract from 300-400 or more participants annually.

The workshops cover a variety of tree-related educational topics, provide hands-on experience, and allow for discussion about emerging problems associated with tree care. The goal of the workshop is to create a cadre of people well trained in tree selection and care who can train others and/or provide improved tree-related services to the public.

Since 1991, 1,579 tree care professionals and others interested in tree care have participated in these workshops. This article reports on an evaluation of impacts of the TCW on community tree care in Nebraska and on individual attitudes and behaviors related to tree care.

Background

Urban and community forests provide many benefits. Most important, the presence of trees in an urban setting influences the physical environment (Harris, 1992). Changes to turbulent transfer rates and wind speed influences air quality and microclimate. Scott, McPherson, and Simpson (1998) found that trees improve air quality by direct absorption of air pollutants. Trees alter

microclimate by influencing radiant flux, air temperature, and carbon dioxide (Brandle, Hodges, & Wight, 2000). Urban forests reduce CO₂ emissions in two ways: sequestering CO₂ in woody biomass and reducing electric power production emissions by reducing demand for heating and cooling needs (McPherson, 1998).

Additionally, the presence of trees in an urban setting has important economic benefits. McPherson and Rowntree (1993) and Simpson and McPherson (1996) found that small changes in cooling and heating loads, due to the presence of trees, have significant economic impacts. Other studies have documented the influence of trees on residential property values by estimating the increased market value for homes with trees (Anderson & Cordell, 1988; Ebenreck, 1989). Harris (1992) cites additional benefits from urban forests such as aesthetics, psychological and health benefits, erosion control, and noise reduction.

While documenting the benefits of urban and community forests is useful, information describing the impacts of creating a large cadre of people well trained in tree selection and care is lacking. Such impacts might include:

- Improved knowledge about trees;
- Improved tree care skills;
- Use of workshop information to train others in tree care;
- Increased involvement in community tree and environmental organizations; and
- Changed perceptions about community forests.

Purpose and Objectives

The purpose of the study was to document the impacts of the Tree Care Workshop on Nebraska's community tree resources and to solicit feedback from attendees to help make the TCW more relevant to participants' needs. This article focuses on the former. Objectives of the study included determining:

1. Tree care-related status of participants who had attended a workshop between 1996 and 1999;
2. Degree to which respondent knowledge about trees improved;
3. Degree to which respondent tree care skills improved;
4. Respondent use of tree care information to train others in tree care; and
5. Respondent perceptions about the extent to which the management of community tree resources have improved as a result of the workshops.

Methods/Procedures

The research design was a descriptive survey of past Tree Care Workshop participants. The population (non-duplicate names) was formed by combining workshop participant lists from the last 8 years (N=1,579). Combining the lists of past attendees eliminated duplicate names. A sample size of 600 was selected at random from the past participant population, and 193 surveys (32%) were completed and returned.

Respondents from the sample were asked to skip some questions if they had not attended a workshop in the last 4 years. This was done because the researchers felt that recall by respondents attending a recent workshop would be greater and would provide a better indicator of program impacts.

The survey was submitted to external reviewers to assess face and content validity. Reviewers were identified and chosen based on their understanding of Extension programming as well as survey instrument design. The survey was mailed to a randomly selected sample of past participants in November 1999 using the Dillman total design method (Dillman, 1978). Administration of the survey included mailing a cover letter explaining the importance of the research, a copy of the survey, and a stamped return envelope. The mailing procedures included a follow-up reminder postcard sent 10 days after the initial mailing, followed by a second mailing of the survey to non-respondents after 3 weeks.

Quantitative data were reported with frequencies, percentages, means, and median scores depending on the level of measurement suggested by the question. The survey contained 13 original response categories listed on the survey instrument that detailed a respondent's status related to tree care. Analysis of the data indicated that many respondents selected more than one category and that the findings did not differ between similar groups.

We consolidated the findings into five categories of status or occupation related to tree care:

1. Commercial service providers,
2. Information providers,

3. Landowners/homeowners,
4. Both commercial service and information providers, and
5. Other.

"Commercial service providers" include people involved in commercial arborist/tree services, golf course maintenance or management, nursery garden center employees, lawn services, park maintenance or management, and groundskeepers at various institutions. "Information providers" included Master Gardeners, teachers, Extension personnel, and Natural Resource District employees.

Results

Most attendees learned of the workshops through direct mailing of brochures (58%) or through a friend, newsletter, or newspaper (33%). Few (3%) learned of the workshops via email, and none via the Internet. Most attended to improve their tree care knowledge (40%), because of job related needs (26%), or because they had an interest in tree care at work or home (17%).

Who Were the Participants?

The Tree Care Workshop is attended by a diverse group of participants with various occupations and status related to tree care. The tree care status of respondents (Objective 1) was measured by frequency counts. The largest group (37%, n=71) identified themselves as "commercial service providers" (Table 1). The smallest group of respondents (9%, n=18) identified themselves as being "both commercial service and information providers."

Table 1.
Tree Care-Related Status of Participants Who Had Attended a Workshop
Between 1996 and 1999 (n=193)

Status	n	%
Commercial service providers	71	37
Information providers	50	26
Landowners/homeowners	28	15
Other	26	13
Both commercial service and information providers	18	9
Totals	193	100

Did the Tree Care Workshop Improve Knowledge?

Objectives 2 and 3 (improvement in tree care knowledge and skills) were measured with a four-point Likert-type scale with response categories ranging from "did not improve" (1) to "much improved" (4). The mean perception of the TCW's effectiveness in improving knowledge about trees was 2.9, with the combined group "commercial service and information providers" reporting the greatest increase in knowledge and the "commercial service providers" showing the least (Table 2). Median scores indicate that respondents thought their tree care knowledge was improved as a result of the workshop.

Table 2.
The Degree to Which Knowledge About Trees Improved (n=189)

Respondent Group	Mean	Median	n
Both commercial service and information providers	3.33	3	18
Information providers	3.14	3	49
Landowner/homeowner	2.89	3	27

Commercial service providers	2.79	3	71
Other	2.75	3	24
Totals	2.94	3	189

Did the Tree Care Workshop Improve Tree Care Skills?

The mean perception of the TCW's effectiveness in improving tree care skills was 3.0 (Table 3). Using median scores, the respondent group "both commercial service providers and information providers" perceived their tree care skills to have been much improved, while the remaining respondent groups perceived their tree care knowledge to have been improved by attending the workshop.

Table 3.
The Degree to Which Tree Care Skills Improved (n=187)

Respondent Group	Mean	Median	n
Both commercial service and information providers	3.47	4	17
Information providers	3.06	3	49
Other	3.04	3	24
Landowner/homeowner	2.90	3	29
Commercial service providers	2.85	3	68
Totals	3.00	3	187

Did the Participants Train Others in Tree Care?

The degree to which participants trained others in tree care (Objective 4) was measured using frequency counts of the dichotomous response categories "yes" (1) and "no" (2). Table 4 results indicated that 63% (n=120) of the respondents had used information obtained from the TCW to train others, while 37% (n=71) had not used the information to train others. Approximately 83% (n=100) of the respondents trained between one and 10 people, 13% (n=15) trained between 11 and 25, and 4% (n=5) trained more than 25. Publications distributed at the workshops were used on the average of once a month by all respondents and slightly more often by information providers.

Table 4.
The Use of Tree Care Information to Train Others in Tree Care (n=191)

Respondent Group	(Yes) Trained Others	(No) Did Not Train Others
Commercial service providers	45 (63%)	26 (37%)
Information providers	33 (70%)	14 (30%)
Landowner/homeowner	9 (31%)	20 (69%)
Both commercial service and information providers	15 (83%)	3 (17%)
Other	18 (69%)	8 (31%)
Totals	120 (63%)	71 (37%)

Did the Management of Community Tree Resources Improve?

To measure the impacts of the TCW on management of Nebraska's community forest resource (Objective 5), a four-point Likert-type scale with response categories ranging from "no improvement" (1) to "greatly improved" (4) was used. The mean extent to which the TCW was perceived to have improved the management of community tree resources was 2.11 (Table 5). Using median scores, the respondent groups "commercial service providers," "commercial service and information providers," and "other" perceived the management of their community tree resource to have been improved by attending the workshop; "information providers" perceived some improvement; and "landowners/homeowners" perceived no improvement.

A large majority of respondents (86%) thought that the condition of trees under their care had improved, and 85% reported they planted or recommended a greater diversity of tree species. This latter finding is supported by several recent community forestry assessments conducted in west central Nebraska, where numbers of tree species planted in urban areas have considerably increased over the past 20 years (Allison & Wilson, 2002).

In addition, 24% of respondents reported that their communities had established or changed tree care ordinances, and 51% of respondents indicated they thought their communities had benefited

economically. Statewide, respondents indicated that management of community tree resources had "somewhat improved."

Table 5.
The Extent to Which the Management of Community Tree Resources Improved
(n=176)

Respondent Group	Mean	Median	n
Commercial service providers	2.38	3	68
Both commercial service and information providers	2.27	3	15
Other	2.21	3	24
Information providers	1.87	2	45
Landowner/homeowner	1.58	1	24
Totals	2.11	2	176

Discussion

The results of the study show that the Nebraska Tree Care Workshops have had a considerable impact on improving community tree resources and their management across the state. The workshops have been instrumental in creating a large cadre of people well-trained in tree selection and care, the size and expertise of which has increased with each passing year, and this has had positive statewide impacts on Nebraska's community forests. The Tree Care Workshops have had a considerable impact on improving participant tree care knowledge, tree care skills, and community tree resources and their management across the state.

Participants indicated they provided improved tree-related services to the public and thought their work in tree-related organizations in their communities had increased the quality of tree care statewide. Additionally, workshop participants have trained many additional people in tree care and/or provided improved tree-related services to the public, a multiplier effect that considerably expands the impacts of the TCW program. The benefits of better managed community forests include:

- More beautiful towns and cities,
- Reduced risk of catastrophic disease epidemics,
- A more resilient community forest resource,
- Enhanced energy conservation,
- Greater interception and infiltration of precipitation,
- Reduced flooding, Cleaner air,
- Improved wildlife habitat, and
- Reduced noise.

Extension specialists and educators can use these findings to better serve their clientele in community forestry and other areas in several ways. The results demonstrate the importance of using a train-the-trainer approach. This approach creates a multiplier effect, expanding the overall impacts of the program to reach greater numbers of people. By training professionals in tree care, this approach builds the capacity for local organizations to deliver high quality tree care services over the long-term.

In an era of increasingly tight budgets, this is a powerful way to stretch human and financial resources while generating tangible impacts. It also demonstrates the need for periodic comprehensive evaluation of programs to determine if clientele needs are being met, to better target programming, and to assess program impacts.

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