

SOCIAL BENEFITS OF RESIDENT INVOLVEMENT IN TREE PLANTING: COMPARISON WITH DEVELOPER-PLANTED TREES

by Robert Sommer, Fred Learey, Joshua Summit and Matthew Tirrell

Abstract. Residents who planted a yard tree as part of a community shade tree program were more satisfied with the outcome than residents of the same neighborhood who had not been associated with the program. Satisfaction was lowest among those whose trees had been planted by a developer. Block planting sessions allowed neighbors to provide mutual assistance and become better acquainted.

An earlier study in Fresno, CA., documented the social benefits of active resident involvement in planting street trees (10). Those who planted their own trees were much more satisfied with the way that the tree had been staked, its location, the quality of maintenance, the impact of the tree on the block and neighborhood, and had a higher overall opinion of the tree. The difference was particularly marked between those who had planted the trees themselves as part of a community program and those whose trees had been planted by the city. These findings, if confirmed, have important implications for the national movement to encourage urban forestry. Especially during a period of shrinking municipal budgets for tree maintenance, planting trees in neighborhoods without active resident involvement may be a mistake.

Direct participation in environmental change is associated with increased user satisfaction in a variety of settings, such as neighborhood design, community gardens, user-designed parks, and neighborhood renovation (4,11). According to cognitive dissonance theory it is harder to reject a process in which one has been actively involved (1).

The national research agenda for urban forestry in the 1990s (5) considers community involvement to be critical for the continued vitality of the urban forest. Encouraging this involvement requires a detailed understanding of what promotes

shared proprietary values as well as different cultural perspectives regarding trees. Because of the significant implications that our findings might have for a national tree planting initiative, it seemed important to replicate the study in other communities. Sacramento, CA has been selected as one of the target cities in a national shade tree initiative involving cooperation among government agencies, private sponsors from industry and the retail sector, and a major voluntary organization, the Sacramento Tree Foundation. Started in 1982 as an all-volunteer organization, the Sacramento Tree Foundation (STF) expanded rapidly. A half-time program director was hired almost immediately, followed by clerical staff and an education director. In 1990 STF merged with another citizen's organization, Trees for Tomorrow, and began a major planting initiative with support from the Sacramento Municipal Utility District. The goal of the initiative is to plant 50,000 new trees a year for ten years. STF provides workshops for homeowners, trains volunteers as neighborhood foresters, distributes educational materials on tree maintenance, and operates a LEAF-line number for telephone consultation on tree maintenance. An evaluation of a 1986 planting by the Sacramento Tree Foundation suggests that attendance at an initial planting demonstration increases tree survival (7). STF also coordinates a Public Places Program with separate funding.

There are several interesting features of the STF program that encouraged us to use this as a site for examining the effects of resident involvement. Because of the major support provided by the municipal utility, residents receive trees without cost. Residents who sign up for trees receive a personal visit from an STF forester and printed materials on tree maintenance. Trees are distrib-

uted to individuals or to block plantings organized by someone in the neighborhood with assistance from a STF forester.

These conditions allow us to examine aspects of resident involvement not covered in the earlier research (10) that have significant implications for other voluntary organizations engaged in tree planting. While the conditions in Sacramento are unusual, in that this is one of the most extensive shade tree planting initiatives in the nation, the challenges are similar to those faced by other voluntary organizations.

This research is designed to examine levels of satisfaction among households who participated in the shade tree program either as individuals or as part of block plantings with residents who had planted shade trees on their own or whose trees were planted by a developer. On the basis of the extensive literature documenting the benefits of group participation, we predicted the highest levels of satisfaction among STF participants who planted their trees in groups and the lowest satisfaction levels among those whose trees were planted by a developer. It was also predicted that STF households would be more satisfied with the quality of information and assistance they received on tree maintenance. It was difficult to make predictions in advance regarding households who had planted their own trees outside the STF program. Presumably this group was highly involved in the planting process, since they did everything themselves, but without the community supports provided by the STF program.

Method

Sampling. Following the procedures used in the earlier study (10), a list was obtained from STF of neighborhoods where trees had been planted 2-4 years earlier. Because of our interest in neighborhood interaction, we were looking specifically for neighborhoods where group plantings had occurred. STF records enabled us to identify clusters of homes on the same block where planting had taken place on the same day (group planting condition) as well as addresses of participants in the shade tree program where no other house on the block had received an STF tree on the same day (the STF lone condition). This would allow us

to compare the effects of neighborhood participation in tree planting with individual action when all the trees were obtained from the same source.

On the basis of discussions with STF staff, a suburban neighborhood in the southern part of Sacramento County was selected as the study site. Because of budget cuts, all residential tree planting and maintenance in this area were the responsibility of developers and homeowners. A site visit was made to verify the presence of the trees on the STF list. We were specifically interested in front yard trees. If there was no tree in the front yard, or if the house was for rent or sale, the address was removed from the sample. The site visit provided an opportunity to locate houses with front yard trees of similar size and species to those planted in the STF program. These trees presumably were planted by the owner or developer, a difference which could be determined on the survey itself. Based on the survey responses, individuals in the control (non-STF group) could be classified as belonging in the owner-planted or developer-planted groups.

Mail survey. Using a format similar to that of earlier street tree surveys (9), a 27-item questionnaire was designed to measure the respondent's attitudes toward the front yard tree and the neighborhood. For the STF samples, there were several questions regarding specific aspects of the planting program, such as satisfaction with consultation provided by STF, receipt of printed materials, and willingness to pay a per-tree charge. Questions were multiple-choice with space left at the end for written comments.

Because the questionnaires were mailed to street addresses without people's names, we personalized the letters in other ways. Attractive commemorative stamps with first-class postage were used on the exterior and return envelopes. The resident's street address and the researcher's name and return address were hand-written in blue ink on the envelope. The cover letter was personally signed by a researcher and included a hand-written note at the bottom indicating tree species. Each questionnaire was numbered so that the returns could be monitored. Three weeks after the initial mailing, a follow-up letter containing another copy of the questionnaire and stamped

return envelope, was sent to all non-respondents, excluding all cases where the first mailing had been undeliverable.

The time and effort involved in personalization proved to be an excellent investment. The return rate for the first mailing to 102 STF and 116 non-STF households was 46.3% of delivered questionnaires. The second mailing increased the return rate to 61.2% of delivered questionnaires for the total sample. One questionnaire arrived after the cut-off date and was not included in the statistical analysis.

Non-respondent bias. The question often arises in mail surveys as to whether those individuals who respond are representative of the total sample. A procedure used in survey research to address this issue is to compare early and late returns. In the present survey, those who did not respond to the first mailing but subsequently responded to the follow-up letter were non-respondents to the first survey mailing. The responses from the 31 questionnaires returned in the second mailing were compared with the 91 returned in the first mailing. Of the 35 separate comparisons made with Chi-square tests, only one was significant at the .05 level, which is within the range to be expected by chance. Although this does not completely exclude the possibility of non-respondent bias, the high overall return rate plus a lack of difference between early and late returns gives us confidence that if response bias existed, it had minimal impact on the survey results.

Results

STF v. non-STF households. There were 63 households in the sample who received their trees from STF and 48 who did not. Table 1 shows that the STF group was significantly more satisfied with the way in which their trees were staked or supported, with the location chosen for the tree, the quality of maintenance provided, had a higher overall opinion of the tree, less of a desire to see the tree removed, and less of a desire for a different tree.

There were eight items on the questionnaire dealing with neighborhood satisfaction. There were significant differences on two of the items; STF

households considered the neighborhood to be more friendly and attractive than did non-STF households. There were trends in the same direction on some of the other items. A composite Chi-square for all eight neighborhood satisfaction items showed that households who had participated in the STF program were significantly more satisfied with the neighborhood than were non-participants who lived in the same neighborhood.

Ninety-two percent of the STF households reported receiving information about tree maintenance compared with 19% of non-STF households. When asked who they would contact if their yard tree became sick, a majority of the STF respondents said they would contact the Sacramento Tree Foundation. The largest number of non-STF households said they would contact a nursery for advice; their next most frequent resources were garden guides and advice from neighbors.

STF, group v. lone planting. Within the STF sample, there were 35 households who were classified on the basis of STF records as planting in concert with their neighbors. These were

Table 1. Participation in STF program and satisfaction with tree and neighborhood.

Item	Degree of satisfaction 1-low, 5-high		X ²	df	p
	STF (N=71) mean	non-STF (N=50) mean			
Tree staked	4.1	3.5	5.1	1	.05
Tree location	4.3	3.9	5.6	1	.05
Maintenance quality	4.2	3.7	11.5	2	.01
Tree improves yard	4.6	4.2	2.4	1	NS
Improves area	4.4	4.3	0.3	1	NS
Overall opinion	4.2	3.6	6.0	2	.05
Wish to remove	1.9	2.6	9.9	2	.01
Wish different tree	2.5	3.0	3.8	1	.06
Satisfaction with neighborhood:					
Open space	4.0	4.0	-0.2	1	NS
Quiet	4.1	4.0	0.2	1	NS
Children friendly	4.1	4.0	2.8	1	.10
Greenery	4.0	3.8	2.3	1	NS
Friendliness	4.1	3.9	4.6	1	.05
Safety	3.9	3.6	2.9	1	.10
Attractiveness	4.2	3.8	8.5	2	.05
Privacy	3.9	3.9	0.3	2	NS
Sum of satisfaction			21.4	10	.05

households where at least four other nearby households were recorded as having picked up and planted trees on the same day. There were another 38 participants in the shade tree program where no one else on the block picked up or planted a tree on the same day according to STF records. The results showed that those who engaged in group plantings reported getting to know their neighbors better and had more neighbor assistance than those who planted their trees alone. There was a trend for respondents in the group-planted condition to perceive their neighborhood as friendlier than those who planted in the lone STF condition, but this was significant only at the .10 level.

Owner-planted v. developer-planted trees.

On most items, households that were not a part of the STF shade tree program who planted the trees themselves (owner-planted group) were more satisfied with the outcome than households whose trees had been planted by a developer. The differences were statistically significant for tree location, quality of maintenance, perceived improvement of the yard, and perceived improvement of the neighborhood. Non-STF households who had planted trees themselves were less likely to want to see the tree removed or to want a different tree than those in the developer-planted group. Those who had planted the tree themselves were also more likely than those in the developer-planted group to have received tree maintenance information. There were no differences between the groups in ratings of neighborhood satisfaction.

Other analyses. In a further cross-tabulation, the 73 individuals who had received information on maintenance from any source at the time of planting were significantly more satisfied with the quality of maintenance that they were able to provide for the tree than were the 49 individuals who had not received any maintenance information ($t[120] = 4.9, p < .001$).

Because of the financial support provided by the municipal utility, participants in the shade tree program received their trees without charge. To find out how a charge per tree would have affected participation, STF respondents were asked, in five successive questions, if they would have participated if there would have been a charge per

tree of \$10, \$15, \$20, \$25, and more than \$25. There was a clear relationship between tree cost and predicted participation. With a \$10 charge, only half of the STF households would have participated. With a \$15 charge, this falls to 27%, with a \$20 charge to 10%, and with a \$25 charge, to 8% of the households. Several comments following the responses indicated that the small size of the trees provided by STF had been a factor, and the respondent would be willing to pay more for larger trees.

A 4-way analysis comparing the two STF groups with the owner-planted and developer-planted groups showed results were very similar to those found in the 2-group comparisons. Probably the most interesting result is shown in Figure 1 describing overall reaction to the tree. This figure shows no difference among the two STF groups and those households who had planted the trees themselves, but significantly lower satisfaction among those whose trees had been planted by the developer.

Figure 2 shows the percentage of respondents in each group who reported that the tree planting helped them become better acquainted with their neighbors. Only in the STF block planting group did this occur to a significant degree. Although the difference was slight, there was more neighborhood interaction reported in the owner-planted group (not part of the STF shade tree program) than in the STF lone-planting condition.

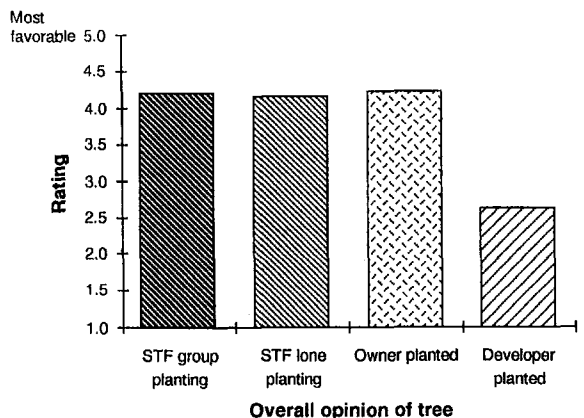


Figure 1. Overall opinion of the tree among the four groups of respondents.

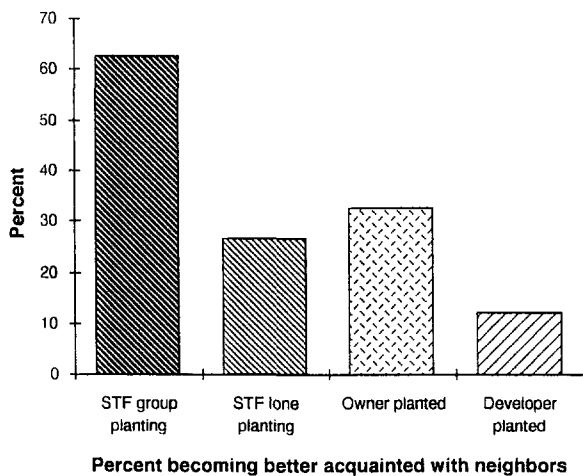


Figure 2. Acquaintance among neighbors resulting from the tree planting.

Discussion

These results provide additional support for the benefits of a comprehensive shade tree program. Residents who had received their trees from the Sacramento Tree Foundation were more satisfied with the planting, the outcome, and the quality of maintenance than were householders who had not been in the STF program who lived in the same neighborhood and had trees of the same age. Those STF households who took part in group plantings, relative to those who planted trees on their own, became better acquainted with their neighbors during the experience and tended to perceive their neighborhood as a more friendly place, although the latter difference was significant at only the .10 level.

The least satisfied group consisted of householders whose trees had been planted by a developer. These residents were less satisfied with the planting and the outcome than were participants in the STF program or non-participants who planted their own yard tree. Those with developer-planted trees were also less likely to have received maintenance information than were residents in the other groups. The latter finding reveals an information gap that might be filled with little additional expense. Although developers are likely to provide new homeowners with information and written brochures about various home features

and appliances, this may not be the case in relation to yard or street trees. Given today's budget realities, it is unlikely that this information gap can be filled by city government. The most likely solution is a partnership between developers and voluntary organizations like the Sacramento Tree Foundation who would be able, at little additional expense, to provide brochures on maintenance issues to developers for distribution to home purchasers. A similar partnership could be developed with real estate agents in the sale of existing homes, in which the purchaser would receive, along with information on the appliances, escrow, and loans, one or more brochures on tree care. This should reduce the over-watering or incorrect pruning that can occur when people move into a house and lack knowledge about the needs of existing trees.

While the presence of street trees is by itself desirable, as shown in numerous surveys and simulation studies (2,3,8), the benefits are enhanced when the residents have been personally involved in planting and maintaining the trees. We are unclear how to interpret the response of the STF sample to the questions about participation rate in relation to per-tree charges. The support given to the STF program by the municipal utility enabled the program to reach households who otherwise would not have participated. This is consistent with the goals of the program, which is supported according to the General Manager of the utility, for a combination of pragmatic and altruistic reasons. The shade tree program is projected to save energy and to enhance "social justice" by making yard trees available to low- and moderate-income households (6). In an earlier paper, we expressed some concern regarding free-tree programs in low-income neighborhoods that produced low neighborhood involvement (10). The STF approach may have solved this problem. Even though the trees are distributed without charge, participants in the program receive consultation with the forester, pick up and plant the trees themselves, receive tree maintenance brochures in the mail afterward, and access to a LEAF-line consultation service afterward. These measures appear to have counteracted the low involvement that might be expected from the

absence of tree charges and thereby seems to be a good approach to be used in low-income neighborhoods.

Acknowledgment. This research was supported by a cooperative agreement with the North Central Forest Experiment Station and a challenge grant from the International Society of Arboriculture. We would like to express our appreciation to the Sacramento Tree Foundation for their assistance.

Literature Cited

1. Brehm, S.S., and S.M. Kassin. 1989. *Social Psychology*. Houghton Mifflin, Boston.
2. Dickerhoof, E.H., and A.W. Ewert. 1993. *Urban forestry research: The Forest Service perspective*. *J. Arboric.* 19:143-151.
3. Dwyer, J.F., E.G. McPherson, H.W. Schroeder, and R.A. Rowntree. 1992. *Assessing the benefits and the costs of the urban forest*. *J. Arboric.* 18:227-234.
4. Francis, M., L. Cashdan, and L. Paxson. 1984. *Community Open Spaces*. Island Press, Washington, D.C.
5. ISA. 1991. *A National Research Agenda for Urban Forestry in the 1990s*. Urbana, IL: International Soc. of Arboric.
6. Mayer, J. "Capital woes targeted by new alliance." *Sacramento Bee*, December 13, 1993, p. B1.
7. Sia, N. 1994. "Street tree planting in Sacramento neighborhoods: An evaluation." Paper presented at the Third Annual Plant-People Conference (March 24-27, 1994), Davis, CA.
8. Schroeder, H.W., and W.N. Cannon. 1983. *The aesthetic contribution of trees to residential streets in Ohio towns*. *J. Arboric.* 9:237-243.
9. Sommer, R., H. Guenther, and P. Barker. 1990. *Surveying household response to street trees*. *Landscape J.* 9:79-85.
10. Sommer, R, F. Learey, J. Summit, and M. Tirrell. 1994. *The social benefits of resident involvement in tree planting*. *J. Arboric.* 20:170-175.
11. Wandersman, A. 1979. *User participation in planning environments*. *Environment and Behavior* 11:465-482.

*Psychology Department
University of California
Davis, CA 95616*

Résumé. Les résidents qui plantèrent un arbre sur leur propriété dans le cadre d'un programme communautaire de plantation d'arbres étaient plus heureux et satisfaits de leur arbre que les résidents du même voisinage qui n'ont pas été associés à ce programme. Le taux de satisfaction était le plus bas parmi les résidents dont l'arbre avait été planté par l'entrepreneur en construction. Les sessions de plantation de quartier permettent aux résidents d'un même voisinage de s'aider mutuellement et de faire mieux connaissance.

Zusammenfassung. Anwohner, die selbst einen Baum im Zuge eines kommunalen Schattenbaum-programms pflanzten, waren mit dem Ergebnis mehr zufrieden als die Anwohner in der Nachbarschaft, die nicht mit diesem Programm in Berührung kamen. Die Zufriedenheit war am geringsten unter denjenigen, deren Baum durch einen Gestalter gepflanzt wurde. Blockweise Pflanzaktionen gestatten den Anwohnern sich gegenseitig zu helfen und besser mietenbezogen zu werden.