

# Program Effectiveness of Community Gardens in Nashville, Tennessee for Homeless and Low Income Populations

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## **ABSTRACT**

Community gardens can provide many benefits including increased produce consumption, improved mental health, and increased exercise. However, few studies have been done on how participation in community gardens can impact the homeless and low income populations. This study was done as a qualitative case study on the effectiveness of three community garden programs in Nashville, Tennessee: Poverty and the Arts, The Nashville Food Project, and Hands on Nashville. Semi-structured interviews were conducted with nine individuals to determine 1) if the anticipated benefits (e.g., increased produce consumption, improved mental health) were being experienced by the gardeners and 2) if any identified gaps in benefits could be addressed through programming recommendations. There was only a marginal improvement in amount of produce consumed by participants. While the participants made it clear that they were happy with the programs, they rarely experienced the potential social benefits normally associated with working in a community gardens. Minor additions to programming have potential to increase participant benefits and we recommend that gardens consider how this might be accomplished. Programming that enhances nutrition education and greater opportunities for food preparation could increase produce consumption and simultaneously advance social interaction among participants. We found that the relationship between homeless and low income populations and community gardens is complex and that more studies would help to improve community garden outreach to these groups.

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## INTRODUCTION

Community gardens typically fluctuate in popularity along with economic trends. Historically, there have been increases in community garden participation during periods of economic recession. For example, there was an increase in community gardens during the Great Depression of the 1930s as well as during the recession of the 1970s. During these periods, community gardens provided the poor access to fresh produce when food prices were too high. In the last decade there has once again been a resurgence in community gardens as the United States works to climb out of its current recession (For reviews of the history of community gardens see Bassett 1981 or Warner 1987). Community gardens provide a location for those without garden space to grow their own produce. Demand for locally grown produce is also rising and many people in the United States are becoming much more aware of where and how their food is being grown. While many people choose to garden at home in order to produce their own “farm-to-table” experience, many urban residents do not have the space available to garden at home. Community gardens often located in urban settings on formerly vacant lots (Ohmer et al. 2009). They also provide the community with a green area for its residents to enjoy and socially interact with other gardeners. The expected benefits of participating in a community garden, aside from greater access to fresh produce, include increased mental health as well as improved general well-being stemming from increased exercise and socialization.

These aspects of community gardens are potentially especially beneficial to lower income and homeless populations. These populations frequently lack the space to grow their own fresh produce and may have limited access to fresh produce. Some community gardens specifically reach out to low income and homeless residents. For example, in Santa Cruz, California the Homeless Garden Project is a 20-year old program that is open to the public. The Homeless Garden Project trains local homeless in sustainable agriculture and marketing as well as providing a safe place for the homeless during the day (see *homelessgardenproject.org* for more information). However, studies documenting the effectiveness of

community gardens in providing benefits to homeless and low income populations are very limited. In this study, I evaluated the effectiveness of three community gardens in Nashville, Tennessee that focus on homeless and low income populations. The study's aim was to determine if these gardens were successful in providing the benefits generally expected from community gardens for these populations, such as improved nutrition, increased social activity, and improved mental health. The three community garden programs studied in Nashville, Tennessee were: Poverty and the Arts, Nashville Food Project, and Hands on Nashville. A brief profile about each garden is given below.

**Poverty and the Arts** is a non-profit whose mission states that it “provides opportunities for homeless and formerly homeless artists to foster their creativity and form meaningful community” (Poverty and the Arts 2016). Members of Poverty and the Arts are allowed access to the studio in order to create art that can then be sold or put on display at the studio. The community garden was created as an extension of the studio where members can express themselves creatively using the garden as the medium. Members are encouraged to use their creativity to make the shared garden space their own. Selection of vegetables grown, where and how to plant is left to the members of the organization to decide. There are also opportunities in which they can use their creativity in a more traditional sense such as painting terra cotta pots, designing plant labels and creating garden art. By working with each other they are creating a space that can be enjoyed by the entire community.

**The Nashville Food Project** works with four separate community gardens. The two locations from which participants were interviewed for this study were the McGruder Community Garden and the Wedgewood Community Garden. The McGruder Community Garden is a neighborhood garden located in North Nashville where local residents are invited to use an individual plot in order to grow food for themselves and their families. The ambition of the McGruder garden is that “by offering monthly training workshops and access to tools, the goals for the garden [can be attained and] are three-fold: to strengthen community ties, increase self-efficacy among participants, and grow organic produce that is otherwise difficult to access in North Nashville” (Nashville Food Project 2016) One section of the Wedgewood

Community Garden is used as a neighborhood community garden and another section is used in conjunction with the Center for Refugees and Immigrants of Tennessee and works specifically with refugees. This garden provides a unique experience where “multi-generational and multi-cultural gardeners range from grandmothers growing alongside their children and grandchildren to a new family in the neighborhood from Somalia. Gardeners are often seen helping out in each other's plots, sharing work in a larger community plot and enjoying all of the perennial herbs and flowers that this space has to offer” (Nashville Food Project 2016). Both of these community gardens encourage a sense of belonging and fellowship and well as provide access to fresh produce where it otherwise could be difficult to obtain.

**Hands on Nashville** is a local nonprofit that “works to address critical issues facing the Middle Tennessee community through volunteer-centric programming.” Part of that programming is its five-acre urban farm. “The farm serves as a vibrant resource for volunteers to grow gardening skills, learn about healthy eating choices and gain an understanding of food access in our community. A portion of produce harvested from the Farm is donated to nonprofit partners addressing food access issues, including The Nashville Food Project” (Hands on Nashville 2016).

The anticipated benefits of the participants of these organizations are an increase in the consumption of fresh produce as well as an increase in a sense of community. Many homeless and low income people often feel isolated and rejected (Hwang 2009) and community gardens are thought to assist in negating some of these feelings by providing a sense of community for its participants (Ohmer et al. 2009). The act of gardening itself can help to provide a sense of purpose to its participants which can lead to improved mental health (Myers 1998).

#### *Fresh Fruit and Vegetable Consumption in Homeless and Low Income Populations*

According to Sprake et al (2014), up to 80 percent of homeless people have at least one health need, many of which are nutrient related, and 70 percent suffer from poor mental health. Increased access to fruits and vegetables is associated with increased consumption (Kamphuis et al. 2006). In addition, density of food outlets and the food available through these outlets differs by race and class, with lower income and

racial/ethnic minority communities having less access and availability (Befort et al. 2006; French et al. 2001; Kamphuis et al. 2006; Moreland et al. 2002). Homeless and low income populations are more likely to have nutrient deficiencies as well as have less control over the food they consume (Sprake et al. 2014; Strasser et al. 1991). Community gardens can improve access to fresh produce for those who participate in them (Litt et al. 2011). This could, in turn, lead to better nutrition due to improved consumption of produce. Gardeners consume more fresh vegetables than non-gardeners and studies suggest that participants of community gardens are even more likely to meet the daily serving requirement of fruits and vegetables than home gardeners and non-gardeners (Litt et al. 2011). However, studies of gardeners' consumption of fresh produce have not specifically looked at homeless and low income populations. Poverty and malnutrition are closely linked due to high food prices on non-staple items (Norton 2014). The prices are even higher on organic or specialty items and those with a tight budget are not able to have as diverse of a diet as people above the poverty line (Norton et al. 2015). Many low income and homeless people utilize publicly funded programs as a way to obtain their meals (Strasser et al. 1991). These programs often rely on donations and local food banks. Consequently, the nutritional quality is variable and dependent on availability of supplies. Many times the foods that are easily stored and distributed are not high in nutritional value (Strasser et al. 1991). Participants in community gardens typically share the produce they harvest and in doing so are helping to improve the nutrition of their friends, family, and neighbors (Blair et al. 1991).

### *Mental Health and Community Gardens*

With a community garden, participants are often able to provide input as to what they would like to grow. Litt et al. (2011) posits that the ability to control what to plant in a community garden could help increase the feeling of neighborhood attachment. Attachment relates to one's emotional bond to neighborhoods and may influence one's access to and use of everyday places (Cattel et al. 2008; Manzo and Perkins 2006). This attachment can lead to continued beautification of urban areas and an increase in other healthy habits such as walking and increase the sense of community in a neighborhood. Another study found that community garden participation greatly improved the self-perceived emotional quality of

adults (Draper and Freedman 2010). The U.S. Department of Agriculture states that “Grassroots community gardens and agriculture programs are an opportunity to teach about garden food production and nutrition at the community level. Learning where food comes from and what fresh foods taste like, and the pride of growing and serving produce that you grew through your own effort, can be life-changing experiences.” (U.S. Department of Agriculture 2010).

Homelessness and poverty can create a feeling of isolation and developing a sense of community through gardening can provide a safe place for people who may not feel that they have a place elsewhere (Draper and Freedman 2010). Community gardens provide a space for relationships to develop among neighbors that may not have come together under other circumstances (Cattell et al. 2008). As people get to know others in their community, a stronger neighborhood is created. When this happens, the community can work more effectively in addressing other issues that can further improve their neighborhood (Hanna and Oh 2000). Gardening also provides a sense of accomplishment and can encourage participants to feel more empowered in other aspects of their lives while adding value to the community (Myers 1998). This sense of empowerment and increased self-esteem is linked to the gardener’s ability to improve an area or neighborhood. By growing their own food, they are able to supply nutrient rich food for themselves. Providing for oneself, along with the nurturing involved in growing plants reinforces self-confidence and empowerment (Hoffman et al. 2007).

## **METHODS**

### *Project Objectives*

This project aimed to evaluate the effectiveness of three Nashville community garden programs that target homeless and low income populations by determining if garden participants were receiving the expected benefits stated by each program. Additionally, recommendations were developed for these programs based on these evaluations.



### *Targeted Population*

The target population for this study were participants who worked in the community gardens of Poverty and the Arts, Nashville Food Project and Hands on Nashville. Staff members for each program helped to identify garden participants that would be beneficial to the study. The criteria for participation in the study was based upon attendance in working in the garden. Each program defined good attendance differently. For Poverty and the Arts, attendance was determined by how often a gardener worked per month. A similar approach was used by the Nashville Food Project. Hands on Nashville recommended participants that worked weekly at the urban farm and were considered Leaders at the farm. Many participants had been involved with their respective programs for two seasons, however, some had only been participating for one garden season but were enthusiastic about continuing their involvement for the next year and heavily involved with the current season's program. Thus the gardeners interviewed were some of the most engaged of the garden participants.

### *Project Study Design and Procedures*

The project was designed as a qualitative case study analysis using a semi-structured interview process. In order to determine the effectiveness of the programs, we developed a guided interview to evaluate the participants and the benefits they receive. After obtaining approval from Virginia Tech's Institutional Review Board (Appendix A), the staff at each program helped to identify participants that had experience working in the gardens and were regular participants. Participants were verbally informed of the study and asked to participate by giving signed consent (Appendix B).

Participants were asked to briefly introduce themselves and then asked about their neighborhood of residence, gardening experience, reasons for working in a community garden and what they do with the produce that is harvested (Appendix C). Each participant was also given the opportunity to describe any suggestions for improvement to the program for which they were involved. Eight participants took part in an audio-recorded, 30 to 45 minute face-to-face interview at the community garden in which they were involved and one interview was held over the phone due to scheduling conflicts and transcribed instead of

recorded. At the end of each interview, participants were asked to complete a demographic worksheet to aid in characterizing the population of participants for each garden.

After the interviews took place, interview data were transcribed and coded with personal identifiers removed. All data were analyzed to determine themes among gardeners and program missions.

### *Data Analysis*

Interviews were transcribed and coded so that similarities and differences could be established between participants' benefits and goals and the missions of the programs. As the interviews were transcribed and coded, similar themes among the interviewees began to emerge. Significant themes were then used to develop recommendations for each program.

## **RESULTS**

A total of nine interviews were conducted for this study utilizing the interview protocol (Appendix C). Of the nine participants, four participate with the Nashville Food Project, four with Poverty and the Arts, and one participant works in the urban farm for Hands on Nashville. They each gave their own perspective on how the gardens and the programs themselves have affected them.

Each interview began with two introductory questions (Table 1) to help the interviewee feel more comfortable. The participants were asked to tell a little about themselves as well as where they were from and if they had family in the Nashville area. Seventy-five percent of the participants that chose to answer were not originally from Nashville although 50 percent had family that lived in the area. The next set of questions was focused on the participants' previous gardening experience as well as how long they had participated in the community gardens. Seventy-eight percent of participants had some form of gardening experience, while 22 percent had no previous experience growing fruits or vegetables. One of the participants stated that she felt inspired to join the community garden after a brief attempt to grow herbs at home. She said that she "never had a green thumb" but wanted to "see if she could grow things with the assistance of someone else." Forty-four percent of gardeners were in their second season of participation

and the remaining participants were in their first season. All participants plan on working in the community gardens next season.

**Table 1. Interview Question Sections**

<b>Introductory Questions</b>	<b>Gardening Background</b>	<b>Community Garden</b>	<b>Lifestyle</b>	<b>Reflection</b>
Can you tell me a little about yourself?	How long have you participated at _____ community garden?	Who do you use as a resource for help at the community garden?	What do you do with the harvested vegetables and fruits? Provide an estimate of produce harvested each week during the season? Eaten?	What improvements would you suggest for the community garden?
Where are you from? Do you have Family here?	Did you have previous gardening experience?	Can you give me a few reasons as to why you choose to participate at this community garden?	Did you eat a lot of fresh produce before working in the garden? where did you get your produce	Is there anything else you would like to share that we have not covered?
		How did you find out about this community garden?	How often do you eat what you grow?	
		How often do you work in the garden?	Who do you communicate with most at the garden?	
		Does anyone work with you? Or who else might work in the garden with you?	Do you talk with any gardeners outside of the community garden?	
			Do you intend to work in the garden next season? What would prevent you from working in the garden next season? What will you do during the winter to prepare for next season?	

The third section of the interview focused on the community garden experience. All participants stated that they used the garden managers or garden coordinators as their primary resource at the gardens and one participant said that he used a fellow gardener as a resource as well. The participants with no previous experience gave reasons such as “wanting a full program experience” or “trying to be healthier” as reasons for joining the community garden. Common themes emerged among the participants for working in the community gardens (Table 2). These included access to organic produce, focus on health,

exercise or a place to escape. The amount of time each participant worked in the garden varied depending on the time of year as well as from person to person. Of note, the participants mentioned that they did not work in the gardens as often during the peak summer temperatures but had subsequently increased their participation as the seasons began to cool. The average length of participation ranged from once a month to four times a week.

The fourth section of the interview focused on the participant’s lifestyle as it pertains to the community garden. Participants were asked to describe why they chose to join the community garden. The most reported answer was that it improves healthy lifestyle. In contrast, the least reported answer was it provided cheaper or more convenient access to produce. The majority of the men interviewed reported healthy lifestyle as the primary reason for working in the community garden whereas the majority of women indicated their primary reason for joining was for the gardening experience as well as the social interaction aspect of gardening. Additionally, many of the participants stated that they wanted organic produce. One participant said that she liked that she “knows where her food came from.” Another participant stated that the garden was “close to home” and provided a way to exercise.

**Table 2. Common themes cited by respondents for participating in community gardens in Nashville, Tennessee (n=9).**

<b>Reasons for Participating in Community Gardens</b>	<b>Percent</b>			<b>Number of Responses</b>
	<b>Male Respondents</b>	<b>Female Respondents</b>	<b>All</b>	
Improves Healthy Lifestyle	66	50	56	5
Higher Quality/Better Tasting Food	33	50	33	3
Convenience/Cheaper	33	17	22	2
Experience/Social/Escape	33	66	44	4

The participants were asked to give estimates on how much produce was harvested each week as well as how much of that was consumed. Participants also reported that much of the harvest was shared with

friends and family or co-workers. Participants were asked if they talk with any gardeners outside of the garden and also whom they communicate with most at the garden. The results were split almost evenly with 55 percent of gardeners saying they did not talk with other gardeners outside of the garden while 45 percent stated that they did. All participants again stated that the person they communicated with the most was the garden coordinator or director. The participants were asked if they planned on working in the garden the following season and if there was anything that might prevent them from doing so. All participants stated that they would like to participate for a following season and that the only thing that could prevent them from doing so would be if the program was no longer available or if they had some health issue that prevented them from doing so. Most of the gardeners did not have plans for the winter season but a small group said they would use the off season to study vegetable gardening as well as start seeds for their plots.

The interviews concluded with the participants having a chance to discuss any suggestions for improvement or if there wished to add anything that had not already been discussed. The majority of the participants did not have any suggestions but a few mentioned that more planning could be beneficial to the program.

## **DISCUSSION**

### *What Motivates Populations to Participate in Community Garden Programs*

After reviewing our data on what motivated the homeless and low income individuals in our study group to participate in community garden programs, we noticed that the primary reason for participation was not what we anticipated. Although we anticipated that the convenience and lower cost of fresh produce would be very attractive to participants, the most reported reasons related instead to achieving a healthier lifestyle. This included the desire for more organic food as well as a way to exercise. We assume that many of the homeless and low income gardeners had received charitable meal donations. These meals are often calorically dense, high fat, high sugar and are often prepared using donated food items (Strasser et al. 1991, Dachner et al. 2009). By having the opportunity to grow their own food, community gardens

may not only offer participants more control over how their food is produced, but also an opportunity to have fresh food included in their meals. Interestingly, the least reported reason for participation was that it made fresh produce more convenient or cheaper. One possible explanation for this is that many of those interviewed already have access to food through other programs but what they desire is fresh, organic produce that is not readily available through most meal programs.

The second most reported response why participants chose to join the garden was for the experience or to fully participate in its programming. For example, two participants reported that they chose to work in the community garden simply because it was an activity available through a program with which they were already associated (i.e., Poverty and the Arts art studio). Another mentioned that they joined for the opportunities to socialize. The emotional and mental health benefits of gardening are often cited in order to promote community gardens; however, only one participant interviewed for this study mentioned the therapeutic benefits of individual gardening as a reason for joining the community garden. Instead, the community garden represented an opportunity for participants to achieve a healthier, more socially engaged lifestyle. As a part of that improved lifestyle, improved eating habits were expected.

#### *Evidence of Impacts on Eating Habits*

During the interview process participants were asked to share information on their weekly produce consumption as part of a demographic worksheet given to them at the end of each interview. Seven of the nine participants completed the form. Unlike other studies that report an increase in produce consumption among community garden participants (Litt et al. 2011; Baker et al. 2013), among our study participants working in the community gardens did not significantly change the amount of produce consumed. Since many of the participants cited improved health as a reason for joining the garden, this suggests that there may be an additional barrier (other than the supply of fresh vegetables and fruit) for increasing consumption of produce. We speculate that there are three possible reasons why participating in the community garden did not appear to increase fresh produce consumption in our interviewees.

First, many of the participants may not have access to a kitchen where they reside so preparation of the produce is difficult. Also, there may be minimal access to food storage locations and most produce harvested may be highly perishable. The Poverty and the Arts studio has a small kitchen that the artists have access to during studio hours; however, if closed, the participants would have to wait to prepare their produce until its open. Thus even when there is a kitchen onsite, participants may have limited access.

The second possible explanation postulated is that the gardeners are unfamiliar with some of the produce they grow and harvest and thus may have limited knowledge about how to prepare and cook some vegetables. One participant noted that she grew eggplant for the first time this season because it was one of the vegetables provided to her. Gardeners had some input as to what they could grow but their options were limited to the seeds and transplants that were made available to them. Therefore, many gardeners grew certain vegetables simply to have something to grow rather than vegetables familiar to them.

Lastly, the third possible reason speculated was participants were sharing more of their harvested produce than they were consuming. Eight of the nine participants reported that they gave away some portion of the produce harvested. This could be attributed to the mental health benefits of nurturing others as described above. By sharing fresh produce with friends and family, the participants are able to nurture others and develop a sense of empowerment and confidence found by taking care of others. Improved mental health could lead the participants to remain in the programs for multiple seasons.

### *Program Retention*

Again as part of the interview process, each participant was asked how long they had been involved with the community garden. All participants reported that they were either in their first or second year in the program. Each participant was recommended as a candidate for the study because they were considered to be among the more active of the garden participants. The implications of these results are that those who have been participants longer may be less active or that participants do not stay involved more than one to two seasons. A contributing factor to this apparent low program retention may be that off-season involvement is minimal. When asked about their plans for winter garden involvement the participants

either did not have any plans to stay involved during the winter months or were not sure on what activities they could perform during the winter months. One participant stated that she would like to spend the off-season studying about vegetable gardening so that she would be more prepared for the following season. Another participant mentioned that he would like to do some clean-up of the garden area; however, the garden coordinators indicated that the gardens were not operational once cold weather set in. With increased program retention, we believe that the sense of community would continue to increase.

### *Mental Health and Sense of Community*

Mental health benefits and sense of community at each garden were not as strong as anticipated. Several studies report that working with others in a community garden provides mental health benefits (Cattel et al. 2008; Draper and Freedman 2010; Hoffman et al. 2007). Working in community gardens can help to build self-efficacy and give the participants a sense of empowerment that comes from nurturing something to grow (Hoffman et al. 2007). While nearly half of the participants reported experience/social/escape as a reason for participating in the gardens, there is little evidence that this is a benefit that gardeners are receiving. The increased socialization helps to build and strengthen the neighborhood in which the garden is located. In this study, the majority of gardeners reported that they worked alone in the garden and had little interaction with other gardeners. While often cited as a benefit of community gardens, we found that there are not many studies on gardens and their ability to build a sense of community. The building of a sense of community as discussed by Chavis and Wandersman (1990) acts as a mechanism to stimulate the healthy development of environment (i.e., neighborhood) and the people who inhabit it. Sense of community and the problem-solving abilities of a community are reciprocal (Chavis and Wandersman 1990). Therefore, this suggests that if the sense of community was strong within a community garden, the ability of its members to address other issues like homelessness would be improved. In order to help the gardens strengthen their ability to provide these and other benefits to their participants, we have formulated a list of recommendations.



## RECOMMENDATIONS

We have several recommendations to help the community gardens better serve their participants, particularly in terms of increasing social engagement and consumption of fresh produce. Many of our recommended program enhancements have overlapping benefits, as seen in Table 3.

**Table 3. Participant benefits anticipated to result from implementing various programming recommendations in three community gardens in Nashville, TN.**

Recommendations	Anticipated benefit			
	Off-season activity	Increased produce consumption	Increased sense of community	Improved mental health
Kitchen workshop days		✓	✓	
Nutrition education days		✓	✓	
Vegetable production classes	✓		✓	
Cool season crops	✓	✓		
Garden planning days	✓	✓	✓	✓
Communal section of garden		✓	✓	✓
Gather feedback from gardeners	✓	✓	✓	✓

Through the interviews, gaps began to emerge in the benefits the participants were hoping to gain versus what they were actually receiving. Table 4 shows benefits that emerged through the interviews as well as references from the literature that offers evidence that community gardens can provide such benefits. It also compares the percentages of participants that stated the benefits were important versus the amount of participants that felt they received these benefits.

**Table 4. Analysis of benefits commonly associated with participation in community gardens that emerged as significant themes in participant responses and garden objectives. Columns indicate if literature documents these benefits in community gardens, if study gardens identified these themes as goals, if participants valued or received these benefits. Recommendations were structured to address gaps. (PA=Poverty in the Arts; NFP= Nashville Food Project; HON=Hands on Nashville)**

Type of benefit	Supporting literature	Gardens where this benefit is a stated or implied goal	Percent participants indicating benefit was		Recommendations addressing gap
			Important	Received	
Increased Produce Consumption	Litt et al., 2011	PA, NFP, HON	100	22	<ul style="list-style-type: none"> <li>• Kitchen workshops</li> <li>• Participant selection of plants</li> <li>• Cool season crops</li> <li>• Garden planning days</li> <li>• Communal section of garden</li> <li>• Program evaluations</li> </ul>
Improved Mental Health	Hoffman et al., 2008 Myers, 2008	PA, NFP	0	55	<ul style="list-style-type: none"> <li>• Garden planning days</li> <li>• Communal section of garden</li> <li>• Program evaluation</li> </ul>
Cheaper/convenient Fresh Food Access	Litt et al., 2011	PA, NFP, HON	22	100	<ul style="list-style-type: none"> <li>• Cool-season crops</li> <li>• Communal section of garden</li> </ul>
Experience Sense of Community	Cattel et al., 2008 Ohmer et al., 2009	PA, NFP, HON	11	0	<ul style="list-style-type: none"> <li>• Kitchen, nutrition, and vegetable production workshops</li> <li>• Communal section of garden</li> <li>• Program evaluations</li> </ul>

Following a logical thought process, we developed a set of recommendations that we believe will help the programs better serve their participants. Recommendations are focused on areas where both gardens and participants placed importance on a particular outcome or benefit, and where there was little evidence that this outcome was being consistently achieved. In the case of mental health improvements, although no participants identified this as important to them, gardens identified this benefit as important, and

participants indirectly indicated it was important insofar as they were happy with their experiences and indicated they were receiving mental health benefits. In addition, we focus on recommendations that are relatively simple to implement. Each recommendation is described more fully below, and resources are provided in Appendix D that point to programs in other gardens that may provide useful examples.

### *Nutrition Education and Kitchen Access*

In order to help participants meet their goal of healthy eating and improved healthy lifestyle, we recommend that the garden programs implement a nutrition education program as well as kitchen workshop days. We believe the kitchen workshops would help educate the gardeners on how to eat and prepare the produce they grow so that it will not only increase their consumption, but allow them to experiment more with what they grow. The nutrition workshops could be hosted by county extension agents or by a local nutritionist. A short seminar on the benefits of the vegetables grown in the garden as well as ways to incorporate more healthful foods could inspire the participants to consume more vegetables (Baker et al. 2013). The kitchen workshop days could be either in the growing season or during winter months. One option would be to host a cooking class so that gardeners could learn how to prepare and eat vegetables that are not familiar to them. These workshops could expand the experience of working in a community garden as well as provide another opportunity for gardeners to meet and talk with each other about what they grow and why and therefore help to build a sense of community as well (Table 3; Table 4).

### *Communal Garden Areas and Projects*

Another recommendation we suggest is the addition of a communal area for herbs that belongs to the entire community. We believe this would help with increasing consumption by providing additional cooking ingredients (i.e., herbs) as well as emphasizing the community aspect of the gardens.

### *Off-season Involvement*

In order to promote longer program retention of participants and increase their sense of community, several recommendations focus on off-season involvement that we believe could help maintain the interest of the gardeners during winter months. In Nashville, winters are usually mild and a variety of fall

and early spring vegetables can thrive in the garden. Providing an opportunity for gardeners to continue to work in cool temperatures keeps participants involved longer than the typical May-October season.

Another option for off-season involvement is to hold classes on vegetable gardening. Some participants mentioned they would like to learn more about gardening or work on planning for their gardens during the winter and these workshops would provide an opportunity to do so.

### *Program Evaluation*

An important recommendation is that of receiving annual or biannual evaluations from the garden participants. This will provide the gardens with feedback on their programs while allowing the participants to feel that their opinions are important and that they are a valued member of the community. We recommend that an evaluation tool called ripple effect mapping be utilized, if possible. Ripple effect mapping would allow a large number of garden participants to work together to map out the benefits of the garden as well as how well any changes to the program worked for that season (Kollock 2012). By having the participants work together to evaluate the program they are able to discuss with each other what they believe is important to the program and can share ideas with each other which in turn could help foster a stronger sense of community. In addition, given the difficulties of communicating with homeless and low income populations via email or telephone, an evaluation procedure that relies on in-person communication may be most likely to succeed. If it is not possible to get the participants together, a simple questionnaire asking how satisfied the participants are with the program and if they have any suggestions for the following year would provide some program guidance to the gardens.

## **CONCLUSIONS**

Interviews with the participants at Poverty and the Arts, the Nashville Food Project, and Hands on Nashville indicated that these programs were valuable to the gardeners. Each participant was enthusiastic about the garden they worked in and displayed intentions to continue their involvement. While many of the participants began working in the garden as a way to obtain a healthier lifestyle, their consumption of fresh produce was not greatly increased. Recommendations to provide kitchen workshops and nutrition

education classes could help increase produce consumption. Another popular reason for joining the gardens was to engage in a new experience and have increased social interactions. This is yet another area that seemed to need improvement to help foster a stronger sense of community among the participants. The evaluations will allow the programs to evolve with the wants and needs of its participants. More studies are needed in order to continue assessing and improving the impacts community gardens have on the homeless and low income populations.

## **LIMITATIONS TO THIS STUDY**

My interest in community gardens began during my time pursuing my bachelor's degree at the University of Tennessee. While taking a course on horticulture therapy I began to learn about the benefits people can gain from gardening including improved mental and physical health. Homeless and low income populations are often marginalized. When I learned of the community gardens in Nashville serving these populations I knew I wanted to explore how these programs work with populations that are often transient. This ultimately became one of the largest limitations to conducting the study. Many of the homeless I met and talked with did not have reliable transportation or a way to communicate (i.e. cellphone or email access). As a student with a full-time job and a family, the lack of communication made it difficult to coordinate schedules and arrange interviews. Many of my interviews had to be rescheduled because the participants failed to show up for the scheduled meeting. Also, the homeless participants did not have a schedule to keep in terms of when they worked in the garden so arranging a time to visit the garden did not guarantee there would be any participants to talk to. However, when schedules were compatible and I was able to conduct the interviews, the participants were welcoming and more than willing to discuss their experiences in the garden. It was evident that the gardens provided a safe place where they could forget about their daily lives and focus on nurturing their plants.

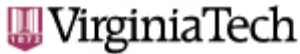
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# APPENDICES

## Appendix A -IRB Approval Letter



**Office of Research Compliance**  
Institutional Review Board  
North End Center, Suite 4120, Virginia Tech  
300 Turner Street NW  
Blacksburg, Virginia 24061  
540/231-4606 Fax 540/231-0959  
email [irb@vt.edu](mailto:irb@vt.edu)  
website <http://www.irb.vt.edu>

### MEMORANDUM

**DATE:** September 1, 2016  
**TO:** Susan D Day, Sarah Morgan Anetrella, Susan Clark, Megan E O'Rourke  
**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

**PROTOCOL TITLE:** Program Effectiveness of Community Gardens in Nashville Tennessee

**IRB NUMBER:** 16-728

Effective September 1, 2016, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at: <http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

### PROTOCOL INFORMATION:

Approved As: Expedited, under 45 CFR 46.110 category(ies) 5,6,7  
Protocol Approval Date: September 1, 2016  
Protocol Expiration Date: August 31, 2017  
Continuing Review Due Date\*: August 17, 2017

\*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

### FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

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*An equal opportunity, affirmative action institution*



## Appendix B – Consent Form

### VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY Informed Consent for Participants in Research Projects Involving Human Subjects

**Title of Project: Program Effectiveness of Community Gardens in Nashville Tennessee**

**Investigator(s): Sarah Anetrella** [asarah86@vt.edu](mailto:asarah86@vt.edu) 615-566-8489  
Susan Day Department of Horticulture, Virginia Polytechnic Institute and State University  
Susan Clark Department of Horticulture, Virginia Polytechnic Institute and State University  
Megan O'Rourke Department of Horticulture, Virginia Polytechnic Institute and State University

#### I. Purpose of this Research Project

This study intends to evaluate the program effectiveness of community gardens in Nashville, Tennessee. The purpose of this study is to provide more information to local areas on the effectiveness of the gardens and the benefits they provide to the gardeners. Gardeners over the age of 18 will be interviewed from three Nashville, Tennessee community gardens: Poverty and the Arts Community Garden, Nashville Food Project Community Garden, and Hands on Nashville Urban Farm.

#### II. Procedures

The interview will last about 30 to 45 minutes. To ensure I get your words exactly right, I will audio-record your interview at the garden to learn more about your participation in the garden as well as asked some background information about your lifestyle before and after they began working in the gardens. If needed, participants may be asked to meet for a second interview. After our chat, you could:

Complete a short form with basic information about yourself and your household, such as age, race, gender, number of people in your household, etc.

Allow me to take photos and/or video of your garden plot

Let me call or email you to double check that I got your words and information all right.

### **III. Risks**

You may be asked questions that may bring up unpleasant memories. You are able to stop the interview at any point and can refuse to answer any questions you are uncomfortable answering.

### **IV. Benefits**

To improve public knowledge of the benefits of community gardens in hopes of making it easier to build these gardens so that they are more available to the public. No promise or guarantee of benefits has been made to encourage you to participate. The results from this study may also be published.

### **V. Extent of Anonymity and Confidentiality**

All participants will remain anonymous in any publication of these results. All voice recordings and pictures/videos of your garden will be labeled with a code or pseudonym, so your real name and other identifying information will not be attached to anything from our visit. All data will be stored on a password protected computer and all hard copies (ie, consent forms) will be stored in a lockbox. Any data that includes names or contact information will only be accessible to Sarah Anetrella, coded data may be made available to Susan Day, Susan Clark and Megan O'Rourke. All voice recordings will be destroyed when we are finished with the project. The Virginia Tech (VT) Institutional Review Board (IRB) may view the study's data for auditing purposes. The IRB is responsible for the oversight of the protection of human subjects involved in research.

### **VI. COMPENSATION**

Interviews are completely voluntary with no compensation for participating in this study.

### **VII. Freedom to Withdraw**

It is important for you to know that you are free to withdraw from this study at any time without penalty. You are free not to answer any questions that you choose or respond to what is being asked of you without penalty. Please note that there may be circumstances under which the investigator may determine that a subject should not continue.

### **VIII. Questions or Concerns**

Should you have any questions about this study, you may contact me at (615) 566-8489

or one of the research investigators whose contact information is included at the beginning of this document.

Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at [moored@vt.edu](mailto:moored@vt.edu) or (540) 231-4991.

## IX. Subject's Consent

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent to:

- Participate in a 30 – 45 minute voice recorded interview.
- Complete a short form with basic information about myself and my household, such as age, race, gender, number of folks in my household, and so on
- Allow Sarah to take a video and/or photos of my garden plot
- Let Sarah call or email me after our chat to double check that she got my words and information all right

\_\_\_\_\_ Date \_\_\_\_\_  
Subject signature

\_\_\_\_\_  
Subject printed name

-----  
*Participant will be given a copy of this form*

## Appendix C - Interview Protocol

The purpose of this study is to listen to participants of the Nashville Food Project Community Gardens, Poverty and the Arts Community Garden and Hands on Nashville urban farm in order to discover how the goals and mission of the gardens align with the goals and benefits the participants feel they gain through their work. Through roughly twenty participant interviews, these benefits and goals will be compared with those of the gardens to determine program efficacy. The results may be used to assist the gardens in developing programing to better assists its participants.

Date:

Location:

Interviewee Pseudonym/Code:

Consent Form:

Introductory Protocol:

Hello, My name is Sarah and I wanted to talk with you today about your participation in the community garden. I grew up helping my parents grow vegetables and now grow a few small plants at home but have never worked in a community garden before. If it's ok I would like to ask you some questions so that I can better understand how working in a community garden benefits its participants.

(Go over consent form)

(turn on audio recorder, test one)

Introductory Questions:

- 1) Can you tell me a little about yourself?
- 2) Where are you from? Do you have family here?

Gardening Background:

- 3) How long have you participated at \_\_\_\_\_community garden?
- 4) Did you have previous gardening experience? If yes, please briefly describe the experience.

Community Garden:

- 5) Who do you use as a resource for help at the community garden?
- 6) Can you give me a few reasons as to why you choose to participate at this community garden?
- 7) How did you find out about this community garden?
- 8) How often do you work in the garden?
- 9) Does anyone work with you? Or who else might work in the garden with you?

Lifestyle :

- 10) What do you do with the harvested vegetables and fruits? Provide an estimate of produce harvested each week during the season? Eaten?
- 11) Did you eat a lot of fresh produce before working in the garden? where did you get your produce?
- 12) How often do you eat what you grow?
- 13) Who do you communicate with most at the garden?
- 14) Do you talk with any gardeners outside of the community garden?
- 15) Do you intend to work in the garden next season? What would prevent you from working in the garden next season?
- 16) What will you do during the winter to prepare for next season?

Reflection:

- 17) What improvements would you suggest for the community garden?
- 18) Is there anything else you would like to share that we have not covered?

Thank you for your time today!

## **Appendix D – Recommendation Handout**

### **Recommendations to Improve Programming**

Below is a list of recommendations we believe would enhance the programming of the gardens. There is also a list of resources for examples of successful community garden programs as well as programming.

#### **Workshops**

We recommend implementing several workshops to help increase program retention as well as help foster a stronger sense of community among participants.

##### *Kitchen Workshops:*

Cooking classes could help the participants feel more comfortable preparing vegetables they may be unfamiliar with. This will increase their confidence both in and out of the garden. Also, increasing interactions among participants outside of the gardens will continue to strengthen the sense of community.

##### *Nutrition Workshops:*

Increased knowledge of nutrition has been linked to increased produce consumption. By providing annual nutrition workshops, the garden participants will most likely increase the amount of produce consumed.

##### *Vegetable Production Workshops:*

Many participants noted that during the winter months they would like to learn more about how to grow vegetables. These workshops would not only provide the learning experience they desire but would also allow participants to bond over their similar interests.

#### **Garden Planning Days**

Many participants discussed how they would like to be more involved in the garden planning. By scheduling days for the participants to come together and work on plans for the following growing season they will work together to improve the gardens, increasing the sense of community.

#### **Garden Improvements**

##### *Communal Garden Section:*

In gardens where participants have individual plots, we recommend providing a communal garden area for herbs or other crops to help add to the sense of community. An herb garden would help to signify the community aspect of the garden but could also enhance to probability of produce consumption by providing free ingredients.

##### *Cool Season Crops:*

Increasing the length of time available during the year for gardeners to participate could help with program retention since the gardeners will not be absent from the garden for as long.

## **Program Evaluation**

We recommend implementing annual program evaluations from the participants. Gathering feedback is essential in ensuring the gardens are providing the experience the participants are looking for. There are many ways to evaluate programs; however, we suggest a tool called ripple effect mapping. Ripple effect mapping is an evaluation tool that works well in a group setting and would allow participants to work together in the evaluation (for more information see Kollock 2012). Also, a simple satisfaction questionnaire could also provide important feedback especially if the participants prefer to submit their feedback anonymously.

## **RESOURCES**

**Homeless Garden Project, Santa Cruz, CA** <http://homelessgardenproject.org/>

*This large community garden serves homeless and focuses on using the community garden as a tool to provide grounding for this population. The website features numerous examples of programming directed at homeless and low income participants.*

**American Community Garden Association** <https://communitygarden.org/>

*This association provides multiple resources on community gardens around the country. It is also useful for connecting with other community gardens.*

**University of Tennessee Extension Services**

<https://ag.tennessee.edu/fcs/Pages/Health/CookingForALifetime.aspx>

*The Cooking for a Lifetimes program is one of many that UT Extension provides for the public. This particular cooking school focuses on the importance of nutrition as well as cancer screening and prevention.*

**University of Tennessee Extension Services**

<https://ag.tennessee.edu/fcs/Pages/Food/HealthyFoodChoices.aspx>

*This article discusses different nutrition topics as well as provides resources for more nutrition education.*

## **Ripple Effect Mapping**

Kollock, Debra. Ripple Effect Mapping: A “Radiant” Way to Capture Program Impacts. *Journal of Extension*. 2012

*This article provides examples on how to conduct ripple effect mapping as well as a more detailed explanation of how it can be utilized.*