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WHY DO GARDENERS GROW? PERCEIVED EFFECTS OF HOME AND COMMUNITY GARDEN FOOD PRODUCTION

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CHAPTER ONE – INTRODUCTION

With a growing interest in the potential of home and community gardening to produce food and to help address public health concerns, a number of recent studies have aimed to quantify home and community garden productivity (Conk & Porter, 2016; Pourias, 2015; Few of these quantification studies, however, have focused on the experiences of participants. The purpose of this study is to describe the motivations for and impacts of home and community gardening on participants within one of these harvest quantification studies, the Team Gardener Researchers of Wyoming (Team GROW) project in Laramie, Wyoming.

Background

With as many as 49 million Americans living in food-insecure households in 2012 and rising rates of diet-related disease such as obesity and diabetes, home and community gardening initiatives have become a popular response to growing concerns about food security, public health and our current food production practices (Coleman-Jensen, Nord, & Singh, 2013; Okvat, Zautra, 2011). Many gardening and gardening-support programs aim to combat health disparities, often with a focus on food security and access to healthy foods (Draper, 2010; Zoeller, 2012).

Increased participation in home and community gardening could have significant implications for home food production and public health in the United States. In a campaign introduced by the USDA in 1977, urban garden programs were supported in order to address issues of food insecurity and poor nutrition among low-income, urban-dwelling citizens. At the height of the program, an estimated $6 of food was produced for every $1 invested by the USDA, and approximately 320 hectares of urban land was being cultivated by nearly 200,000

gardeners (U.S. Dept. of Agricultural Extension, 1989). In 1943, approximately 40 percent of the fresh produce consumed in the United States was produced in wartime Victory Gardens, (Lawson, 2005). Increasing support for home food production, community gardens, and farmer's markets offer alternative strategies to address issues of food supply, access to healthy food, and food-related health disparities (Hynes & Howe, 2002).

Barriers to home and community gardening are varied and often depend on factors such as geographical location, socio-economic status, and availability of land. Barriers include but are not limited to a lack in one or more of: land access or ownership, adequate financial resources, time, skills and knowledge, physical ability, transportation, and/or interest, (Okvat & Zautra, 2011; Hawkins, Thirlaway, Backx, & Clayton, 2011). However, according to Patel (1991), 76% of individuals polled expressed interest in making community gardens a permanent part of their communities. Patel also found that in addition to the three million Americans who garden at community sites, an additional seven million would garden if land were made available.

Review of Existing Literature

Motivations

Research on motivations for home gardens have been primarily conducted through surveys (Butterfield, 2009; Schupp & Sharp, 2011). In a study conducted by the National Gardening Association, a representative sample of 2,559 households across the United States were surveyed about both home and community gardening. The study identified the following as the top reasons respondents participate in food gardening: "To grow better tasting food, to save money on food bills, to grow better quality food, to grow food I know is safe" (Butterfield, 2009, p.9). These reasons were identified by 58%, 54%, 51% and 48% of respondents, respectively (Butterfield, 2009). In a study of community gardeners in upstate New York, top motivations for

gardening including improved health, enjoying nature, and increased access to fresh foods (Armstrong, 2000). Schupp and Sharp (2011) drew on data collected during the *2008 Ohio Survey of Food, Agriculture, and Environmental Issues*, and found a positive relationship between economic hardship and the likelihood of a respondent having a household garden. Pro-environmental behavior and engagement in local food systems similarly increased the odds of having a household garden (Schupp & Sharp, 2011).

Outcomes

The majority of studies surrounding the impacts of gardening on individuals pertain to community gardening rather than home gardens (Armstrong, 2000; Okvat, Zautra, 2011; Litt et al., 2011; Patel, 1992; Hynes & Howe, 2002; Twiss et al., 2003). Draper (2010) states that the term *community garden* refers to "the convergence of multiple individuals, joining together in diverse settings…to grow, among other things, food," (p. 459). Studies surrounding community gardening have cited benefits to participants such as increased fruit and vegetable intake, increased social networking, increased perception of well-being, reduced stress levels, and increased access to fresh food (Hynes & Howe 2002.; Litt et al., 2011; Patel, 1991; Waliczekz, Mattson & Zajicek, 1996).

Van Den Berg & Custers (2011) and Park, Shoemaker & Haub (2009) identified physiological benefits to individuals who identify as gardeners. The term *gardening* was not limited to plots used for food production in these studies, but it would be reasonable to assume that food and non-food gardening would offer similar physiological and psychological benefits, such as hand strength, overall physical strength (Park et al., 2009), and restoring positive mood and reducing cortisol levels after acute stress (Van Den Berg & Custers, 2011).

Harvest measure studies

A number of recently published harvest measure studies have attempted to quantify home and community garden production (Algert et al., 2012; Gittleman et al., 2010; Gittleman et al., 2011; Smith & Harrington, 2010; Vitiello et al., 2009; Vitiello et al., 2010; Pourias et al., 2015). Two of these studies included an interview component focused primarily on gardening practices and impact on individual food security (Pourias et al., 2015; Vitiello et al. 2010). Pourias et al. (2015) published an additional study that attempted to describe the experiences of community gardeners involved in their original harvest measure study through interview and survey analysis, and found benefits similar to those described in earlier studies. In their discussion of results, Schupp and Sharp (2011) identified the need to include attributes and cultural motivations of individual gardeners in future harvest quantification research.

Research Questions

In what was called the "Team GROW" action research project, over 30 home and community gardeners in Laramie, Wyoming quantified their food harvests. As an extension of that project, the goal of my study was to identify and describe other outcomes for these gardeners which are less easily measured. The purpose of this study was to gain a better understanding of how these gardeners perceive the impact of gardening on their households and the meaning they derive from participating as citizen scientists in the Team GROW research project. Research questions guiding this study were:

(a) How do Team GROW gardeners describe their motivations for food gardening?

(b) What effects do Team GROW participants perceive as resulting from their food gardening, particularly for their households?

(c) What meanings have gardeners derived from participating in the Team GROW action-research project?

CHAPTER TWO – METHODS

Research Design

This study used semi-structured interviews (*N*=11) and a survey (*N*=10 of the 11) with a subset of Team GROW gardeners who participated in at least two seasons of the study to gain understanding of their experiences both as gardeners and as citizen scientists participating in the Team GROW harvest measure project. Demographic information was also collected. Qualitative data in this study – interviews, field notes, and open-ended survey questions – were mainly analyzed using a grounded theory approach. Grounded theory (Glaser & Strauss, 1967) enables researchers to develop a substantive theory grounded in data rather than begin the investigation with a preconceived hypothesis (Charmaz, 2000). This approach was used in order to enable the motivations and meanings about gardening and being gardener-researchers that the participants expressed drive the findings, rather than analyzing the data within an imposed theoretical framework.

Role of the Researcher

Certain subjectivities existed due to an existing relationship between researcher and participants. Because interviews took place multiple years into the Team GROW project, I had communicated extensively with participants prior to this study, including through making garden site visits, regular email exchanges, and occasional group meetings where I played the role of an observer-as-participant. According to Maxwell, "relationships that are complex, fluid, symmetric, and reciprocal- reflect a more ethical stance *and* are likely to yield deeper data and better social science" (2012, p.92). My positive, long-standing relationship between with Team GROW participants was beneficial in that in addition to my gaining a more thorough

understanding of participants' goals for the project, trust had been established over time. Dwyer and Buckle (2009) discuss the benefits of researchers occupying an insider-outsider status, e.g. having perspective as an insider while maintaining adequate distance from the experience of the group being studied. Because I had grown to know many of the participants, I was invested in the success of the project. In order to remain aware of this and other personal biases, I took field notes (explained in further detail below) during or after every interview to track moments when I felt my own subjectivities impacting my perception of the information being shared.

Setting and Participant Selection

Laramie, Wyoming, population 31,814 (U.S. Census Bureau, 2013) sits at 7,165 ft. in elevation in the Southeast corner of Wyoming. Situated on the high plains, the windy, semi-arid climate provides for a relatively short growing season and is considered Zone 4b according to the USDA's plant hardiness zones system. Despite unpredictable weather and suboptimal growing conditions, Laramie has a community of avid gardeners and gardening enthusiasts.

Participants for this study were drawn from Team GROW, a collaborative project between Feeding Laramie Valley (FLV), a Laramie-based not-for-profit organization, and researchers at the University of Wyoming (UW). The goal of Team GROW was to quantify household food production by engaging community members as citizen scientists to weigh and record every ounce of food produced in their home or community garden plots. The project began in 2012 with 5 expert gardeners, recruited by FLV, who co-designed and implemented the pilot study with the UW team. In 2013 FLV broadened a call for participation through flyers, emails and phone calls to individuals within the gardening community, and free events in multiple locations intended to attract as diverse a participant group as possible in terms of both gardening experience and demographics. This attracted 34 participating gardener-researchers for

the 2013 season, all of whom were invited to participate again in 2014. Sixteen of the gardeners began data collection again in 2014. This group was invited to participate in the surveys and interviews for this qualitative study, i.e., individuals were purposefully selected who had participated in a minimum of one year of Team GROW data collection and were at least beginning the next season. This selection was made to potentially enable examination of any relationships between total garden productivity or productivity rates and the qualitative results, for which more than one season of harvest data would be helpful (though this research question is now out of the scope of this study, it will be addressed in future research).

Participants from the 2014 data collection season were invited to take surveys at a project meeting in April of 2015. In addition, all 2012 and 2013 Team GROW participants were asked to take the optional survey through email sent by the director of FLV, and surveys were offered both electronically and as hard copies. All 16 gardeners who began the 2014 data collection season were invited to participate in optional interviews at the FLV office or a location of their choosing in person at the April 2015 meeting and by email. For households in which more than one person identified as a "primary gardener," all "primary gardeners" were given the opportunity to participate in an interview. Of the 16 invited, 11 agreed to be interviewed. Of these, seven were home gardeners, two were community gardeners, and two had both community and home garden plots.

Data Collection

Semi-structured Interviews

Semi-structured interviews were the primary data source for this study and were used to gain insight from participants about their experience with garden food production as well as their participation in the Team GROW project. Interviews included questions about the impact of

growing food on individual households, with additional sub-questions about perceived effects on food security, physical and emotional health, stress, self-sufficiency, ability to share food, and community engagement (see Appendix B). Open-ended questions were used to identify top motivations for gardening and to allow participants to discuss the varied ways in which gardening impacts their lives and households. The interview guide design was guided by direct feedback from 2014 Team GROW participants from an April, 2015 meeting where individuals expressed an interest in exploring the reasons why their harvest results may have differed from harvest measures in similar studies (see Appendix B, questions 6a-6g). Interview guide design was also influenced by a 2014 pilot interview that I conducted and analyzed with two Team GROW gardeners in which the following categories were identified in the context of impacts of home gardening: food security, cost of food, quality of diet, health, sense of pride, and engagement with community members.

Interviews were conducted during the 2015 growing season with 11 participants, including all willing gardeners who identified as a "primary gardener" in their household. Only one household had two primary gardeners, and those gardeners were interviewed in a focus group style interview. Interviews lasted from 25 minutes to one hour, and participants received a $30 stipend for their participation. All interviews were audio-recorded with participant consent.

Surveys

A survey was conducted in April, 2015 with all willing Team GROW participants who took part in the study for at least one of its three seasons of data collection. I co-designed and conducted this survey mainly for this research, though also to contribute to the larger Team GROW research agenda beyond the scope reported here. The survey included questions about demographics, gardening practices, experience, motivations, and outcomes (see Appendix A).

Many of the survey questions were informed by common motivations and results that appeared in previous food gardening studies, as well as by outcomes mentioned in the pilot interview conducted with two participants in 2014. Of the 11 gardeners interviewed for this study, 10 completed the survey (responses from an additional 10 Team GROW participants who took the survey are not reported or discussed here). Summary results are reported in the findings section of this paper.

Harvest Use and Yield Data

Selected harvest-use data from the Team GROW project was used during the data collection and analysis for this study. Specifically, the percentage of produce that gardeners had reported as eaten, stored, or shared from each plot was used during the interviews I conducted as part of a question that asked each gardener about how they use their harvest (Appendix B, question 5). I also looked at overall harvest data reports of each participant in this study to help provide additional context for interpreting their interview and survey responses.

Field Notes

Meeting and field notes taken by other researchers at three semi-annual meetings were used to identify topics of interest to Team GROW participants and to refine my research questions, interview topics, and survey questions. Those notes included a discussion of topics participants wanted to address through interviews, as well as thoughts on how the Team GROW study compares to other harvest measure studies.

In order to help articulate my own subjectivities, I took field notes during and/or after each interview. These notes tracked topics that were not covered by the original interview guide but that began to emerge as common themes. Tracking these topics was crucial for reshaping and developing new interview questions as the study went on. In addition, these notes helped me to

remain aware of when and how my personal beliefs, experiences and background might affect the way in which I was interpreting interviewees' comments.

Data Analysis Techniques

Interviews

Interviews were transcribed by a third party, corrected by me, and then analyzed using a grounded theory approach. Using the constant comparative method of data analysis (Glaser & Strauss, 1967), open-coding was used to note commonly mentioned topics and to develop preliminary ideas about categories and relationships (Maxwell, 2012). After my first pass at open coding, I reexamined the transcripts using a line-by-line coding method to further develop and refine my codes. According to Charmaz, line-by-line coding allows the researcher to remain close to the data, and to "reduce the likelihood of inputting motives, fears or unresolved personal issues to respondents and to collected data" (2005, p. 54). Next, I organized the interview data into categories through focused coding, identifying emerging themes and subthemes. Quotes and coded sections of data were organized by theme to refine categories. Finally, I revisited each transcript for a final coding where I actively looked for specific themes identified in earlier data collection related to motivations for gardening, outcomes of gardening, and participation in Team GROW.

Surveys

Survey questions were divided into three different groups; gardening history, motivations and outcomes of gardening, and household information. Summary household data were reported to better describe our participant group, and summary results were reported for all motivation and outcome questions (see Tables 1-4). Additional questions (see Appendix B, questions 1-7, 11) were used in a qualitative framework to better describe each participant in terms of experience as

it relates to the ways in which they perceive gardening in affecting their households. This data includes responses to questions surrounding years of experience gardening, years of experience gardening in Albany County, hours spent gardening each week, self-reported level of personal commitment to gardening, and confidence in ability to achieve gardening goals.

Trustworthiness

Transcripts along with an initial analysis were shared with participants in order to ensure that the transcript and the researcher's analysis accurately represented their words and experience. This technique, member-checking, aids in improving validity by presenting data and interpretations back to the study participants to increase their reliability (Merriam, 2009). Other techniques used to ensure trustworthiness by enhancing credibility and validity of the data included (a) the use of multiple data sources to cross-check data, i.e., comparing interviews, survey responses and harvest data for consistency in reported data, (b) peer debriefing; discussions of findings and progress within the study with an impartial peer, (Guba & Lincoln, 1989), and (c) a search for negative cases within the data to identify participants whose responses might conflict with emerging themes.

CHAPTER FOUR – FINDINGS

Analysis of interviews, related field notes, and survey data revealed four dominant themes in how community members perceive the impact of gardening on their households. Key motivations and outcomes that participants valued about gardening included:

(1) Knowledge of where food comes from

(2) Improved wellness and quality of life

(3) Increased social networking and community engagement

(4) Favorable effects on household finances and grocery shopping

Three additional themes emerged about participants' experience in the Team GROW project. Gardeners perceived their Team GROW participation as resulting in:

(5) Increased community engagement and information sharing

(6) Increased awareness of community food security issues and opportunities for sharing

(7) Pride in individual and team results

The following sections present each theme and its subthemes in depth. Every gardener interviewed is quoted at least once in these sections. Selected survey results will be noted with the interview data, followed by complete survey results.

Knowledge of where food comes from

The first and most dominant theme to emerge from the data was that participants valued knowing where their food comes from. When asked about main motivations for gardening, ten of eleven participants mentioned knowing where food comes from as a personal or household priority. Two subthemes within this topic were control and independence in the growing process and enhanced quality of the food.

Control and independence in the growing process

When participants mentioned their desire to know where the food they eat comes from, they often discussed it in terms of having control over the growing process. In controlling the process from planting to harvesting, many gardeners emphasized the notion that they could make decisions about growing practices they would otherwise be unable to control. Specifically, participants often mentioned opting not to use chemicals and pesticides, and preferring home grown produce over store-bought food for which the growing practices were unknown. For example, one home gardener said:

> I like growing my own stuff because I'm a little bit, I mean I wouldn't say I'm totally paranoid – I don't buy 100% organic – but I really like having my own stuff that I know is clean in every sense of the word.

In relation to how growing practices which may or may not involve pesticides might affect personal health, another gardener said:

> We put it in the ground, we take care of that dirt, we know right where it comes from so there's something really that feels good about that. You know where it's been, you know what's been on it, you know what's been around it, and that's important because we're consuming it, we're putting it in our bodies and we have to protect our bodies the best we can.

Four of eleven gardeners discussed independence specifically in terms of increased self-sufficiency as a motivation or outcome of gardening. Another two gardeners discussed self-sufficiency as a potential outcome of gardening for other community members, particularly community members who are food insecure.

Enhanced quality of the food

Most participants suggested that growing their own produce resulted in higher quality food in terms of both nutritional quality and freshness. One gardener spoke of the freshness of food produced, by saying:

> If you go buy fresh radishes at Safeway how fresh is fresh? [Another household gardener] pulls them out of the garden, we use the tops in a salad and we eat the radish that meal. So how fresh is Safeway fresh?

Another noted a belief that home grown food is likely healthier:

> I think it's important to know where your food comes from and when you buy food at the grocery store it's just got a few vitamins and minerals that come out of the ground. When you grow your own you can really treat that soil and have it be good stuff and not use any chemicals.

Most gardeners mentioned food quality, including freshness and health value, either directly, as represented in the quotations above, or implicitly, through discussion of other themes, represented below.

Improves wellness and quality of life

The second most prominent theme to emerge from that data was that gardening improves quality of life and wellness in a number of ways. Whether directly through the act of gardening or indirectly through the effects of gardening, participants perceived gardening as improving their quality of life. Subthemes stressed that gardening promotes physical activity, improves mental and emotional health, increases vegetable consumption, provides enjoyment and recreation, and provides additional quality of life benefits.

Promotes physical activity

Four participants discussed increased physical activity as a positive outcome of gardening. Mention of physical activity ranged from acknowledgment of minimal additional activity to significant increases in activity during the growing season. One gardener stated "…it gets you off the couch for a certain amount of time every day no matter what to go and tend to it. So that's good." Another participant noted a significant increase in physical activity due to gardening:

> It's just getting out there first thing every morning, getting out there and going in the high tunnel, that's my favorite place to be. I'd say [the benefit is] the physicality of it for me, all that stretching, weeding, pulling, crawling around on my knees.

Improves on mental and emotional health

Many gardeners perceive gardening as positively impacting their mental and emotional health. Participants used language such as "therapeutic," "relaxing," and "a source of keeping the blood pressure low" to describe their gardening experience. One gardener, in reflecting on the way her motivations for gardening had evolved over time, stated, "…and now I garden for the peace that it brings me, because it really brings me peace."

One gardener mentioned the effect she has seen on others who garden near her in the community garden. She said, "It's healing, it's so many things. I mean you can't even label what gardening is or does to help people heal, to help people give back to themselves, it's neat."

Increases vegetable consumption

Every participant interviewed mentioned increased vegetable consumption to some degree due to their gardening, either limited to the growing season or extended throughout the year through storage or preservation. One participant said of the change in diet within her

household, “We eat a lot more vegetables in the summer than we ever used to for sure.” Another noted that “every night we have something fresh on the table starting the end of May.” NI

Provides enjoyment and recreation

Ten of the eleven Team GROW gardeners interviewed mentioned experiencing joy from the act of gardening or from “watching things grow.” One gardener said, “It’s pretty fun to take something like that and end up with the end products so you see it the whole way through.” Similarly, another gardener said, “I really like watching things grow. It gives me a lot of pleasure and I like having nature, if I had my ideal way I’d live out in the countryside on acres.” A desire to find connection nature or “being outside” was mentioned by three of the eleven gardeners.

Even for gardeners whose growing is extremely time consuming and supplies the majority of fresh food for their household, the process of growing still provided enjoyment. One of the project’s most productive gardeners said the following: “I think it’s just because I always have, I love seeing things grow and the artistic part of me just loves creating things… that’s why I garden.” Another participant said, “I just enjoy being outside and watching things, what happens, even the bad stuff, it’s a learning experience.” Three other gardeners mentioned experimenting or “playing” with new crops for personal enjoyment. Although they valued other outcomes of their gardening, they specifically mentioned enjoying experimenting and watching the growing process as a leisure-time activity.

Provides additional quality of life benefits

Participants mentioned a number of additional positive impacts on lifestyle or household. One participant emphasized that the value of the food from her household garden was based on its availability rather than quantity. This participant, whose garden productivity ranked close to the bottom of the group, said:

> I have enough lettuce to put on a sandwich, and that constancy of having the access to fresh food is huge for me- even if the lettuce leaf I just picked weighs three grams and the arugula on the pizza weighs ten grams. It doesn't show up as a count, a harvest quantity [in the Team GROW harvest data] but it has meant a lot to the quality of my food life.

Another participant discussed the importance of gardening in his life as staying connected to his past. Specifically, gardening allowed this individual to continue the gardening traditions he learned from his grandparents and parents, as well as culinary traditions from his youth. This gardener said, "I have eaten those soup ingredients from childhood. I mean it's basically my mother's soup ingredients that I transferred into my gardening." Eight of the eleven gardeners interviewed volunteered that they had a history of gardening in their family or had gardened in their youth.

Increased social networking and community engagement

The third theme to emerge from the data revealed the impact of gardening on participants' social lives and community engagement. In participants' discussion of increased involvement in the community, three subthemes emerged: participants built new relationships through gardening and became more involved in the gardening community; participants were able to share excess produce with other community members and organizations; and gardening provided opportunities for learning.

Relationship building and community involvement

A number of Team GROW participants mentioned building new relationships as a result of gardening. Through these connections, some gardeners became increasingly involved in the greater Laramie gardening community. One gardener said, "There's been a lot of friendships and

just a lot of neat people that I've met that have the same love of gardening. Before that I had really never met people that had that same drive." Another gardener said the following:

> Gardening is an avenue to a real life conversation and I think that is a difference because these people are, this is real life. This is sustenance. This is growing something. This is food. This is going in your body. This is everything that you are and these people get that.

Sharing

Participants were asked about how they decided to use their harvest and were prompted with a question including data on what percentage of their produce they reported eaten, stored, or shared. Over the first three seasons of Team GROW data collection, gardeners shared an average of 30% (by weight) of their produce (Conk & Porter, 2016). Most gardeners said that their decisions surrounding what and when to share were based primarily on excess produce. One gardener explained, **"**I eat what I can and the worms get some of it I have to be honest and (chuckle) and then I try to share it out with people too." Three gardeners mentioned sharing when they had excess but also being particular about who they shared with, that is, concerned that they should only share with people who would value fresh produce. One community gardener said, "I'm very, very adamant like 'I can't give you food if you're just going to leave it in the refrigerator and it's going to go bad and you're going to throw it away.'"

Some gardeners discussed an exchange of produce or other food products as a result of their gardening. One gardener said, "last year, I don't remember [another gardener's] last name but we gave him a couple of pounds of kale and collard greens and he happened to say 'do you like trout? I have 4 fresh trout I just caught.' And then someone else, we watered for her and she came back with a quart of maple syrup." Although this gardener did not share produce with the

intention of receiving something in return, he says it is common for other gardeners to share something back, either for produce or in exchange for assistance.

In addition to sharing produce, gardeners share plants and seeds. One participant mentioned receiving plants from another gardener in town. This crop was especially productive and enabled the gardener to share a significant amount of produce for the first time in her three years of participation in Team GROW. Two gardeners mentioned bartering produce or plants for a variety of goods and services, including one situation where produce was used as payment for a health care service that would otherwise be too expensive.

Opportunities for learning

Gardening provided participants opportunities for learning and teaching, and every gardener interviewed mentioned exchanges of information as a result of their gardening. One participant called her experience "a constant learning situation" as she described one of her primary motivations for gardening. Another gardener said of his experience in the community garden:

> So you meet people and then after a certain number of years you give tips. I just talked to a couple that you know there's always first timers. 'Ah, how do you do this and this?' So, you help each other out. So yeah it becomes truly a community garden.

Another gardener mentioned learning what crops grow well in Laramie through his experience in the community garden. He said, "The neat thing about the community garden is you see what other people are growing, 'what's that? I didn't know you could grow that'- we'll try that." Another gardener said, "That's what's interesting, I think, is the many ways you can do things. Because it's like the more you learn the more you can grow and share with others."

Two participants mentioned teaching children: one as a main motivation and the other as an important outcome. The first said that rather than quantity of food produced, the opportunity to teach her children about where food comes from motivates her to garden. The other participant said the following about teaching a young family member: "the harvest is almost the most fun, the most rewarding. And then we go back and we weigh it and it teaches her about math, it teaches her about what things actually weigh. We talk about ounces, we talk about grams- it's good all around."

Favorable effects on household finances

Participants were asked about the effect of gardening on their household in general and specifically its effect on shopping habits. Most participants mentioned cost-saving to some degree; some offered specific figures while others simply felt they were saving but could not quantify it. For all gardeners interviewed, food gardening resulted in significantly less produce shopping during the growing season.

Shopping habits

Most gardeners reported significantly less produce shopping during the growing season. One gardener said "it affects how much produce we buy for sure because we don't ever have to buy salad or any of some of those extra things toward the end of the season. We'll not buy potatoes for a very long time." Another gardener stated, "We buy very little produce during the summer."

One participant emphasized the value of having fresh food available at all times. Rather than increased quantities of produce influencing shopping habits, the gardener valued "having fresh food available right outside my door all the time" and not needing to visit the store for fresh vegetables quite as frequently.

Reduced household expenses

Although perceptions of cost saving varied greatly among participants, most gardeners mentioned saving money to some degree. A gardener in the bottom half of study participants in terms of total garden productivity mentioned saving "$3-4 a week," while a relatively productive gardener stated that his garden "impacts several hundred dollars over the summer."
Even gardeners whose motivations for gardening were not related to potential cost saving discussed experiencing satisfaction when considering the low cost of inputs for their gardening relative to the results. One such gardener said, "It's nice to pull out some good beets or pull out some good stuff you can make a stew or a soup with in February and know that we grew this, you know, it came from a $2 seed packet."

Team GROW

With regard to their participation in the Team GROW project, gardeners' interview responses revealed three main themes. Team GROW participation resulted in:

(5) Increased community engagement and information sharing

(6) Increased opportunities for sharing food and increased awareness of community food security issues

(7) Pride in individual and team results

Increased community engagement and information sharing

While many gardeners mentioned relationship building and increased community engagement as a result of gardening in general, a number of participants experienced these outcomes as a direct result of their participation in Team GROW. Participants noted new relationships and opportunities to share information and gardening expertise. One gardener

seemed to value finding the group of gardeners in Team GROW above other aspects of participating in the project. This gardener said "they're my people, for sure," and went on to say "It again goes back to being part of something in the community that actually means something. I'm feeding myself. I'm feeding others. I'm having really neat relationships with people that I would never otherwise meet." Another gardener spoke of the lasting connections made through the Team GROW project: "So it won't completely disappear even when the project is gone. The good connections, networking, good feelings will continue"

Increased opportunities for sharing food and increased awareness of community food security issues

Over half of all gardeners interviewed mentioned that participation in the Team GROW project led to increased awareness of opportunities to share excess produce. Even for participants with extensive gardening experience in Laramie, information gained through Team GROW enabled them to increase the amount of food they shared within the community. One gardener said, "We were pleased to know there were places to share rather than waste," in reference to feeling able to donate to the local soup kitchen and Feeding Laramie Valley. Three participants specifically mentioned becoming better informed about possibilities for sharing produce with Feeding Laramie Valley as a result of a stronger connection to the organization through their participation in Team GROW.

Many participants perceived an increase in their awareness of issues of food security within the Laramie community due to their participation in Team GROW. One participant said:

> Because of all this involvement I've become really aware of how important [food production] is, the fact that if the freeways closed down we wouldn't have any food after 10 days or something in Laramie. We'd run out of food in the stores for people

> and I think it's really wonderful for people to start being a little more independent and growing their own.

Pride in results

At the end of each season of the Team GROW project, gardeners received a report of their harvest including, among other data, totals for what they produced in terms of pounds and the monetary value. Participants took pride in both their individual results and in the results of the group as a whole. In reference to her individual results, one of the project's most productive gardeners said the following: "I was so excited to see that I was one of the main growers, producers. I was kind of shocked that little old me could get out there and do it."

Other gardeners took pride in being part of a group that was showing other community members that growing food in Laramie is possible. One such participant said:

> Knowing our results, our gardens, we're being I guess you could say mentors or models for folks who could garden, would like to garden, should be gardening, need to garden, have to have a garden for food. So it's important to that.

Most Team GROW participants expressed pride in contributing to the project in terms of its potential effects on the greater community, specifically its contribution to local awareness that gardening can significantly affect household and community food security. One participant said of the results, "I can share more [about] what this group is doing and how much they're producing and their involvement with actually weighing things. I mean it's kind of interesting… and so I have shared that with the community." Many of the participants mentioned an increased willingness to talk with other community members about the potential of gardening because of their ability to cite their personal and group results from the Team GROW project. Many were proud to dispel the myth that "You can't grow food in Laramie, Wyoming." One such participant

said, “If you can garden here, you can garden anywhere, I mean that’s huge so I’m really proud of that.”

Survey Findings

For the purposes of this study, only the survey results from the (10 of 11) participants who were interviewed are reported below.

Household information

Of the 10 participants for this study who completed a survey, eight identified as “Non-Hispanic white or euro-American,” while the other two participants declined to answer. All participants who answered a question about formal education had at least some college. Nine of 10 participants had a college degree, and five of those participants had advanced degrees. Table 1 displays the approximate yearly household income of the seven respondents who answered survey question 15.

Table 1 – Approximate Yearly Household Income

	Less than $25,000	$25,000-$49,999	$50,000-$74,999	$75,000-$100,000	More than $100,000	Preferred not to answer
Please choose which category best describes your household income last year	10%	20%	0%	10%	30%	30%

Gardener Experience

The following table (2) and figures (1-4) show how gardeners responded to questions about experience, identity, commitment, and ability.

Table 2 - Overview of Participant Gardening Experience

	Range	Mean response	Median response
Number of years growing food	2 to 40	17.1	11.5
Number of years growing food in Albany County, WY	2 to 25	7.7	6.5
Hours spent gardening per week	1 to 24	7.3	4.5

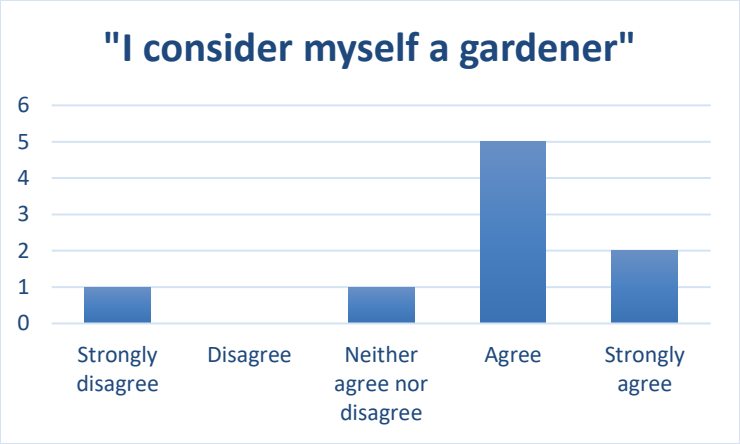


Figure 1- Self-Perception of "Gardener Identity"

Figure 2- Gardener's Rating of Experience Level

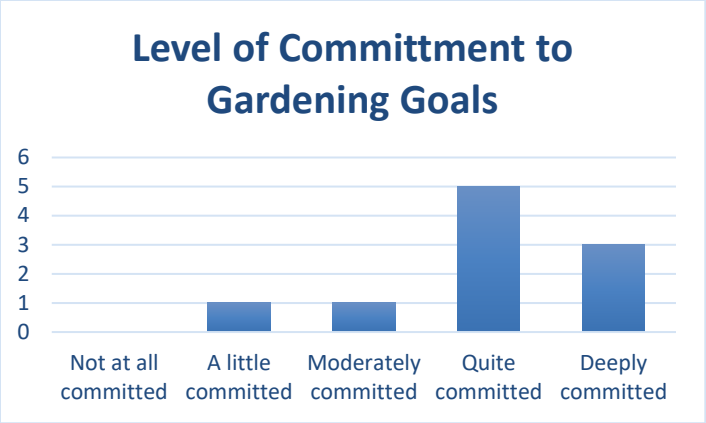


Figure 3- Self-Reported Gardening Commitment

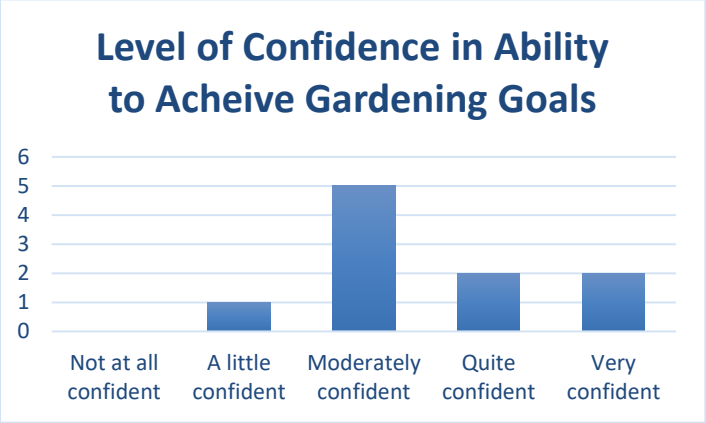


Figure 4-Perception of Gardening Abilities

Motivations and Outcomes

Gardeners were asked to rate motivations for gardening in terms of personal importance. Top five motivations (those considered "Quite important" or "Extremely important" by at least 60 % of respondents) included: "Having better quality food," "being more self-sufficient," "growing food I know is safe," "improving my health," and "for leisure or pleasure."

Table 2 - Overview of Gardener Motivations

Team GROW Gardener Motivations (*N*=10)

How important are the following reasons or factors as motivations for you to garden?					
	Not at all important	**Somewhat important**	**Important**	**Quite Important**	**Extremely Important**

Spending time outdoors	20%	0	30%	20%	30%
Increasing my physical activity	0	40%	30%	10%	10%
Saving money on food	10%	30%	20%	20%	20%
Having better quality food	0	0	10%	60%	30%
Teaching my kids about gardening	0	0	0	0	10%
Feeling productive	0	20%	30%	40%	10%
Sharing food with others	10%	20%	30%	40%	0
Improving my health	0	10%	30%	20%	40%
For leisure or pleasure	10%	10%	20%	20%	40%
Reducing my stress	20%	10%	30%	30%	10%
Meeting other community members	30%	30%	20%	10%	10%
Growing food that I know is safe	0	20%	10%	30%	40%
Being more self-sufficient	10%	10%	10%	20%	50%
Ensuring my household has enough to eat	30%	40%	0	20%	10%

In addition to the reasons listed in Table 2, gardeners were able to add motivations not present in the survey. Other motivations offered by gardeners included:

- “Having fresh food always to hand, e.g., lettuce for a sandwich, arugula for freshening up a delivered pizza, even when we haven't been able to make it to the store or don't want to”
- “Getting in touch with nature”
- “Building my land and making it sustainable”
- “I like having my veggies in Winter”
- “A tradition since my Granddad's Victory garden”
- “No pesticides on food”
- “Fresh food”
- “For canning”

Gardeners were also asked to rate the extent to which they experienced certain outcomes of gardening. The top four outcomes (those considered to have occurred “To a great extent” or

"To a very great extent" by at least 60% of respondents) included: "I had better quality food," "I grew food that I know was safe," "I experienced leisure or pleasure," and "I felt productive."

Table 3 - Overview of Gardening Outcomes

Team GROW Gardening Outcomes (*N*=10)

To what extent does your food gardening actually result in these outcomes (regardless of whether or not they are motivating factors for you)?					
	Not at all	**To some extent**	**To a moderate extent**	**To a great extent**	**To a very great extent**
I spent time outdoors	0	20%	30%	30%	20%
I increased my physical activity	0	40%	20%	30%	10%
I saved money on food	0	30%	50%	20%	0
I had better quality food	0	10%	10%	60%	20%
I taught my kids about gardening	0	0	0	10%	0
I felt productive	0	0	40%	40%	20%
I shared food with others	10%	10%	70%	10%	0
I improved my health	0	40%	20%	30%	10%
I experienced leisure or pleasure	10%	10%	20%	40%	20%
I reduced my stress	20%	10%	30%	20%	20%
I met other community members	10%	30%	20%	20%	20%
I grew food that I know was safe	0	10%	20%	20%	50%
I was more self-sufficient	0	30%	20%	40%	10%
I ensured my household had enough to eat	20%	40%	20%	10%	10%

Participants had the option of adding additional outcomes to the list. Those outcomes included:

- "I have garden time after work that helps me de-stress after work"
- "I grow food that is healthy for me"
- "I enjoy meeting 'my people', gardening people are helpful, friendly and willing to visit about tips and experience"
- "Built sustainability"
- "Benefited the land's critters"

The degree of importance assigned to specific motivations for gardening (Table 2) was mirrored by the extent to which participants reported outcomes occurring (Table 3). However, for a number of factors, the degree of importance assigned to motivations did not match reported outcomes. For example, as seen in Figures 5-6, although one participant considered "saving money on food" as "not at all important" and two considered it to be "extremely important," the average participant felt they saved money on food "to a moderate extent."

Figure 5: "Saving money on food" as a Motivation for Gardening

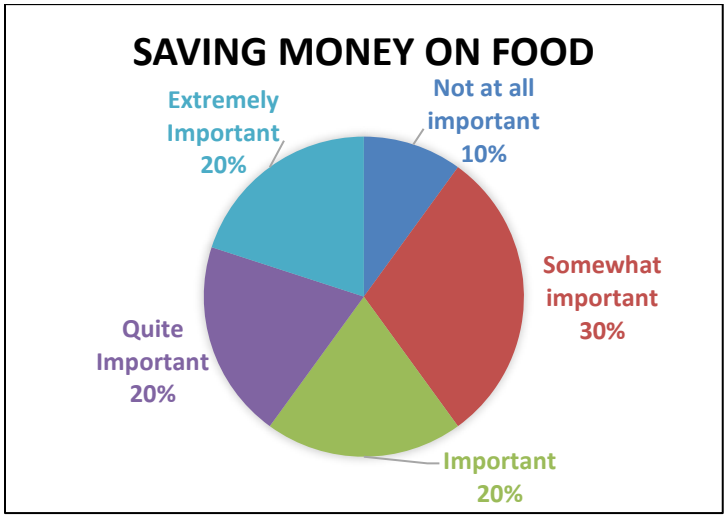
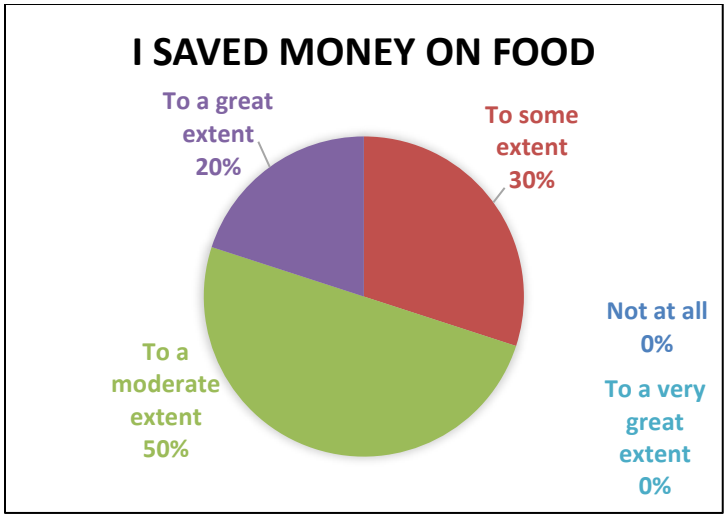


Figure 6: "I saved money on food" as an Outcome of Gardening



CHAPTER FIVE – DISCUSSION

The purpose of this study was to gain a better understanding of how Team GROW gardeners perceive the impact of gardening on their households and the meaning they derive from participating as citizen scientists in the Team GROW research project. Interviews and survey data from Team GROW gardeners revealed a great variety of motivations and outcomes among gardeners. Most of the dominant themes identified in terms of motivations for and outcomes of gardening were consistent with existing literature, though differences that appeared are noted in the sections below.

Motivations

Based on survey and interview data, the most commonly noted motivations for gardening amongst Team GROW participants were: knowing where food comes from, having higher quality food, for leisure or pleasure, to be more self-sufficient, and for health reasons. These findings supported results of other published studies that have identified the above as top motivations for gardeners (Hynes & Howe 2002.; Litt et al., 2011; Park et al., 2009; Patel, 1991; Van Den Berg & Custers, 201; Waliczekz et al., 1996).

Team GROW members identified motivations not found in the literature in a number of areas. For example, four of the participants interviewed for this study mentioned environmental concerns impacting their motivation to garden. Several gardeners did not directly mention environmental concerns, but noted their preference for sustainable gardening practices, decreased packaging needed for homegrown food, and the importance of eating locally sourced food. In terms of gardening methods, survey data from this study suggests that six of the 10 Team

GROW gardeners surveyed identified as organic gardeners, three as mixed-methods, and one as conventional.

A study by the National Gardening Association found that 54% of 2,559 households surveyed identified "saving money on my food bill" as a motivation for gardening, (Butterfield, 2009). Survey data from Team GROW gardeners offered a similar rating of this motivation, as 60% of participants considered "saving money on food" to be "important," "quite important," or "extremely important." However, when interviewed and asked an open-ended question about motivations for gardening, only one Team GROW gardener mentioned cost-saving as a primary motivating factor. Most participants instead mentioned cost-saving as an outcome of their gardening. Figures 5 and 6 in the Findings section show how Team GROW participants rated "saving money on food" as a motivation and "I saved money on food" as an outcome of their gardening.

A major motivation for participants in a study in Paris and Montreal community gardens was to find "emancipation from urban life" and "contact with nature" (Pourias et al., 2015). Most Team GROW members interviewed mentioned gardening for leisure, and enjoying "watching things grow," but never talked about gardening as an escape. Gardeners in Laramie likely have greater access to natural areas than most city-dwellers, but are similarly motivated to garden for leisure and pleasure.

Outcomes

Team GROW participants perceived gardening as resulting in increased quality of food, increased self-sufficiency, positive effects on health, improved quality of life, increased community involvement, and benefits for household finances. Findings from this study supported existing food gardening literature that showed increased vegetable intake as a common

outcome of gardening (Alaimo et al., 2008; Hynes & Howe 2002.; Litt et al., 2011; Patel, 1991; Waliczekz et al., 1996). All 11 participants interviewed in this study mentioned an increase in vegetable intake as a result of gardening, primarily in terms of quantity but also related to variety. Harvest data from Team GROW corroborates these findings; over the first three seasons of data collection, the average garden plot yielded 17 varieties of crops and produced enough food to supply the equivalent of the recommended daily amount of vegetables (based on US Department of Agriculture recommendations) for an adult for 75% of the year (Conk & Porter, 2016). Over half of participants mentioned a shift in diet due to their desire to eat as much as possible from their own gardens. Gardeners with excess produce generally mentioned eating as much of their harvest as possible, and then stored or shared food when they could not manage the amount.

Variety and quantity also affected the diet of those whose gardens were not productive. A gardener whose garden was producing very little at the time of his interview said, "Even the lack of choices is making me look at other healthy options, you know, like dandelion greens." This participant did not have as much as he desired from his domestic plants, but in focusing on what was growing in his garden, he discovered an unused source of food and expanded variety within his diet.

Team GROW gardeners commented on how gardening increased variety in their diet, but unlike a number of studies of urban gardens, they did not mention increased crop variety as a motivation for gardening. A number of studies highlighted the role of gardening in enabling gardeners to grow difficult to find, culturally significant crops (Pourias et al., 2015; Taylor & Lovell, 2015). Although one Team GROW gardener mentioned planting traditional cultural

foods, most gardeners reported choosing crops based on preference and what grows well in Laramie.

Previous gardening outcome studies have identified increased social networking or social capital as a result of gardening (Alaimo et al., 2008; Armstrong, 2000; Draper & Freedman, 2010; Pourias et al., 2015) however none have described gardening's varied effects on social lives and community engagement in as much depth as Team GROW gardeners in their interviews. Gardeners in this study reported creating new relationships and friendships due to gardening, finding like-minded people through gardening, becoming increasingly involved in the gardening community, and exchanging produce and favors with other gardeners and community members. Participants also mentioned opportunities for learning and teaching that arose from their gardening. Whether exchanging information with another gardener, teaching children about where food comes from, or sharing gardening results with the greater Laramie community, Team GROW participants valued the positive impact of gardening on their social lives.

Team GROW

Based on quantitative results from the first three years of the Team GROW study, the average plot of a Team GROW gardener yielded 128 pounds of produce worth $422 yearly (based on local farmers market prices) (Conk & Porter, 2016). Participants expressed pride that their results helped to prove that gardening can significantly affect household food security, even in Laramie, Wyoming. In describing their experience in the project, Team GROW gardeners also identified the following outcomes of the project: increased community engagement and information sharing, increased awareness about community food security and opportunities for sharing food, and pride in project results.

In their survey responses, 70% of Team GROW participants in this study reported that "sharing food with others" was "important" or "quite important" as a motivation for gardening. Based on harvest use data collected throughout the Team GROW project, gardeners ate (on average, by weight) 39% of their yearly harvest, stored 31%, and shared 30% (Conk & Porter, 2016). Team GROW participants reported making decisions around sharing based on having excess produce, and reported sharing first with neighbors, family, friends, and other gardeners. Team GROW gardeners mentioned sharing food with community organizations, contrary to results from another study that recorded harvest use data, in which none of the participants surveyed reported sharing outside of friends, neighbors, and family (Pourias et al., 2015). This difference could be explained by the increased awareness of opportunities to share Team GROW gardeners reported in interviews.

Most Team GROW gardeners acknowledged cost-saving. Because they were interviewed two or three years into participation in a project that gave them the monetary value equivalent of their crops, this information could have influenced the way they regarded the relationship between monetary inputs and quantitative outputs. At least half of those interviewed discussed being surprised at how high their results were in terms of productivity rate and/or value.

Limitations

Limitations in this study included its small sample size, and a participant group that was not likely representative of all gardeners in Laramie. 16 Team GROW gardeners were invited to participate in interviews with the intention of using multiple years of harvest data to look for relationships between reported outcomes and quantitative yield results. As analysis of quantitative results did not occur, it might have been beneficial for the purposes of this study to

invite all willing Team GROW participants to take part in interviews in order to examine a broader or more complete sense of Team GROW participant experience.

The subset of Team GROW participants who took part in this study might not have been representative of gardeners in Laramie, or even of gardeners in the Team GROW project. Demographic data for age, gender, home-ownership, and employment status was not collected. Based on survey and interview data regarding household income and motivations, most or all research participants in this study appeared to be food secure, whereas other Team GROW participants who were not interviewed have discussed gardening "for the food" as their primary motivation. In addition, based on willingness to continue participation in the Team GROW project, the 11 gardeners interviewed might have represented a group with greater dedication or enthusiasm towards gardening, or that has more time to dedicate towards the activity.

Future Research

Further research is necessary to identify potential relationships between gardener productivity and perceived outcomes of gardening. Interview and survey questions in the initial design of this study were aimed at determining how gardener experience, levels of commitment, ability, and gardening practices and inputs might affect plot productivity. Additionally, participants were asked questions of how participation in the Team GROW project may have affected their gardening practices. These data will be analyzed and reported in a future study.

Future research should also explore in greater detail the positive outcomes of gardening mentioned above. Although data from published studies support positive health outcomes from gardening, few studies explore those results in depth. Current efforts in this area include two studies by University of Wyoming researchers and two Wyoming not-for-profit organizations that aim to quantify specific health effects of gardening through randomized controlled trials.

Although this study aimed to describe the experiences of both community and home gardeners, most harvest measure studies and gardening outcome studies address only the experience of community or shared plot gardeners. Future research should also consider the differing experiences between community and home gardeners, the food-secure and food-insecure, and rural, urban and suburban gardeners.

Implications

The benefit of examining the perceived outcomes of gardening for participants in the Team GROW harvest measure study was that existing harvest data could be used in a qualitative framework to begin to examine how productivity might affect perceived outcomes of gardening. All those interviewed for this study experienced benefits from gardening beyond quantities of food. Although reported outcomes of gardening differed somewhat between participants with very high and very low productivity, gardeners seemed to report a number of personal and household benefits irrespective of their plot productivity (assuming a minimum rate of productivity). Public health interventions and gardening support programs should be designed to maximize all benefits of gardening, so that in that gardeners can benefit from increased social engagement, sharing, and positive health effects in addition to quantity and quality of food.

Conclusion

Team GROW gardeners have worked hard over the past few years to disprove the myth that "you can't grow food in Laramie." Through the data collection for this study, the project's gardeners have identified a variety of positive outcomes of gardening in addition to significant garden yields, nutritional significance, and monetary value supported by their quantitative harvest data. Additional positive outcomes of gardening identified included, but were not limited

to: increased quality of food, physical and emotional health benefits, leisure and enjoyment, increased community engagement and positive financial benefits.

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APPENDIX A – SURVEY

Team GROW Survey

I. Gardening History

1. How many years total have you been gardening to grow food?

_____ years

2. How many years total have you been gardening to grow food **in Albany County**?
_____years

3. To what extent do you agree or disagree with the following statement: "I consider myself a gardener." Please circle one:

Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree

4. Compared with other gardeners, how would you rate your experience as a food gardener? Please circle one:

No experience	Very little experience	Some experience	Quite a bit of experience	Very experienced

5. Compared with other gardeners, how would you rate your personal feelings of commitment to your food gardening goals? Please circle one:

Not at all committed	A little committed	Moderately committed	Quite committed	Deeply committed

6. How confident are you in your ability to achieve your goals for food gardening?

Not at all confident	A little confident	Moderately confident	Quite confident	Very confident

7. About how much time do you usually spend per week on routine garden maintenance during the growing season? Please include watering, weeding, harvesting early crops, etc.
_____ hours/week

8. Please list the materials you usually use in or add to your food garden plot each year (e.g., manure, compost, blood meal, chemical fertilizers, mulch):

_____

_____

_____

9. What season extension strategies, if any, do you usually use for your food garden plot? Check all that apply:
- ☐ None
- ☐ Cold-frames

- ☐ Green house
- ☐ Hoop house
- ☐ Buying seedlings
- ☐ Starting seeds indoors
- ☐ Other(s), please specify: _____

10. How do you usually water your plot? Check all that apply:
- ☐ Hand water
- ☐ Drip line
- ☐ Soaker hose
- ☐ Sprinkler
- ☐ Other, please specify: _____

11. Based on your gardening practices, what type of gardener do you consider yourself to be? Please check the category that best describes you:

- ☐ Conventional: I use mostly conventional gardening practices (e.g., chemical fertilizers, pesticide, etc.).
- ☐ Mixed method: I use a combination of conventional and organic practices.
- ☐ Organic: I use strictly organic gardening principles.

II. Why do you Garden?

12. How important are the following reasons or factors as **motivations** for you to garden? Please rate each motivation on the scale below (please circle one answer for each):

Motivation for you to food garden	**Not at all important**	**Somewhat important**	**Important**	**Quite important**	**Extremely important**
Spending time outdoors	Not at all important	Somewhat important	Important	Quite important	Extremely important
Increasing my physical activity	Not at all important	Somewhat important	Important	Quite important	Extremely important
Saving money on food	Not at all important	Somewhat important	Important	Quite important	Extremely important
Having better quality food	Not at all important	Somewhat important	Important	Quite important	Extremely important
Teaching my kids about gardening *(leave blank if you do not have children at home)*	Not at all important	Somewhat important	Important	Quite important	Extremely important
Feeling productive	Not at all important	Somewhat important	Important	Quite important	Extremely important
Sharing food with others	Not at all important	Somewhat important	Important	Quite important	Extremely important
Improving my health	Not at all important	Somewhat important	Important	Quite important	Extremely important
For leisure or pleasure	Not at all important	Somewhat important	Important	Quite important	Extremely important
Reducing my stress	Not at all important	Somewhat important	Important	Quite important	Extremely important

Meeting other community members	Not at all important	Somewhat important	Important	Quite important	Extremely important
Growing food that I know is safe	Not at all important	Somewhat important	Important	Quite important	Extremely important
Being more self-sufficient	Not at all important	Somewhat important	Important	Quite important	Extremely important
Ensuring my household has enough to eat	Not at all important	Somewhat important	Important	Quite important	Extremely important
Other 1 (please specify):	Not at all important	Somewhat important	Important	Quite important	Extremely important
Other 2 (please specify):	Not at all important	Somewhat important	Important	Quite important	Extremely important
Other 3 (please specify):	Not at all important	Somewhat important	Important	Quite important	Extremely important

13. To what extent does your food gardening actually **result** in these outcomes (regardless of whether or not they are motivating factors for you)? Please rate each result on the scale below (please circle one answer for each):

Results from your food gardening	**Not at all**	**To some extent**	**To a moderate extent**	**To a great extent**	**To a very great extent**
I spent time outdoors	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I increased my physical activity	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I saved money on food	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I had better quality food	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I taught my kids about gardening *(leave blank if you do not have children at home)*	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I felt productive	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I shared food with others	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I improved my health	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I experienced leisure or pleasure	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent

I reduced my stress	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I met other community members	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I grew food that I knew was safe	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I was more self-sufficient	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
I ensured my household had enough to eat	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
Other 1 (please specify):	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
Other 2: (please specify):	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent
Other 3 (please specify):	Not at all	To some extent	To a moderate extent	To a great extent	To a very great extent

III. Information about your Household

14. How many people usually live in your household?
_____ people

Of these people who usually live with you, how many are children (aged 17 or under)?
_____ children

15. Please choose which category best describes your household income last year? Check one:
- ☐ Less than $25,000
- ☐ $25,000-$49,999
- ☐ $50,000-$74,999
- ☐ $75,000-$100,000
- ☐ More than $100,000
- ☐ I prefer not to answer this question

16. Please indicate what forms of education you have completed. Check all that apply:
- ☐ Self-educated
- ☐ Some high school, no diploma
- ☐ High school/GED
- ☐ Trade/vocational school
- ☐ Some college
- ☐ 2 year college degree (Associates)
- ☐ 4 year college degree (BA, BS)
- ☐ Master's degree
- ☐ Doctoral degree
- ☐ Professional degree (MD, JD, etc.)
- ☐ I prefer not to answer this question

☐ Other: please specify: _____

17. Please list or briefly describe any education and training (formal or informal) that has helped prepare you to be a better gardener today:

_____

_____

_____

18. Please choose the category or categories that best describes you (check all that apply):

- ☐ Hispanic or Latino
- ☐ Black, Afro-Caribbean or African American
- ☐ American Indian or Alaska Native
- ☐ Pacific Islander or Hawaii Native
- ☐ Non-Hispanic White or Euro-American
- ☐ Asian American
- ☐ Other
- ☐ I prefer not to answer this question

APPENDIX B – CONSENT FORM

University of Wyoming, Cornell University, and community partners:
Consent to participate in research on Community Food System Projects

A. Purpose of the study

We, the Food Dignity action research team, are inviting you to participate in *research on what communities are doing to improve their local food systems*. For example, this might include trying to prevent childhood obesity or hunger, help small farmers or local food businesses, and reduce waste and pollution. Such work might be starting gardens, making a commercial kitchen available, or promoting composting.

We hope to learn about the strategies communities are using for this and what drives people's work with such projects. We're also interested in who tends to be involved and strategies for getting people involved in this work. Then we will compare and contrast what communities are doing. From this work, we hope that communities can learn successful strategies from each other. We also hope that governments and universities can find ways to support these strategies.

B. Interview: What I will ask you to do

If you agree to participate, *I would like to interview you about your experiences* with any "food system" work or projects in your community (e.g., community gardens, canning workshops, composting). We can meet at a place and time convenient to you or, if you prefer, talk on the phone. This can take as little as 15 minutes, but if you are able, I'd like to talk with you for about 60 minutes.

If you are willing, *I would like to audiorecord* the interview. Then I would have it transcribed (all the words written down) and share a copy with you if you would like one. This way I can listen better instead of taking detailed notes. However, like the interview itself, this is optional.

If we have *additional communications*, e.g., emails and conversations, I'd like to use these as well to help me understand the work of any food system initiatives you are involved with.

C. Risks

The risks of participating are *not greater than those you probably face in everyday life*. This research is about the community projects, rather than about individual people such as yourself. However, the interview will be about food issues, and this might bring up memories or social or political situations that make you feel uncomfortable. You do not need to answer any questions or report any experiences that make you uncomfortable. A breach of confidentiality also poses a risk. The research team will, however, follow the procedures below to minimize that risk. Finally, interpretations of all the data the research team gets about a particular project might not agree with your own view of the project. I will share and check this work with you, but it is possible we might end up agreeing to disagree. If so, the research team will try to represent your views in published work, e.g., with quotes.

IV. Benefits:

You will receive $30 for participating in this project, to be paid at the time of the interview. Furthermore, we hope people who are involved with community food system work will learn from this research, and the projects involved can use the data to support their fundraising and publicity work.

V. Confidentiality:

Your individual communications with me (e.g., interviews, conversations and emails) are confidential. This includes making sure that resulting publications and presentations do not make you identifiable in association with individual outcomes or statements unless you request otherwise. The research team will also be extremely cautious about using any comments you make about other people that may make them identifiable to avoid any harm to them, you, or the project. Please note, however, that *communication by email is not secure*, and that this might jeopardize confidentiality. Comments you make in public (e.g., at events or meetings) are, by nature, not confidential. However, the research team will treat them in the same way as above in publications and presentations resulting from this work.

The research team will keep project data (e.g., audiofiles, transcripts, my notes) on password-protected computers and on a secure storage website. I will share any notes or transcripts of your interview only with you, if you would like a copy, and with the research team. Also, the person who transcribes the interviews will have access to the audiofiles. That person will sign a confidentiality agreement. No one else will have access to this data. We will keep the data indefinitely unless you contact me, University of Wyoming, or Cornell University to ask for them to be deleted. The communications with you will only be used for the purposes described here.

VI. Freedom of consent and participation

If you have decided to participate in this study, please understand that your *participation is voluntary*. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. To withdraw from the study, use the information below.

VII. Contacts for questions or withdrawal

You can contact me, any member of the core research team, or either of the university Institutional Review Boards at any time with questions or to withdraw from the study:

Research team leaders:

Project Director: Christine M. Porter, Assistant Professor of Public Health, Division of Kinesiology & Health, 307-766-2143, christine.porter@uwyo.edu, www.uwyo.edu/cmporter
Community liaison: Gayle Woodsum, Founder, Feeding Laramie Valley, 307-399-3815 gayle@feedinglaramievalley.org
Cornell University lead: Scott Peters, Department of Development Sociology, sp236@cornell.edu,
Contact information for researcher presenting this form if not one of the above (fill in): Elisabeth Lewis, Masters Candidate, Division of Kinesiology and Health, 860-604-3796, elewis10@uwyo.edu

If you have questions about your rights as a research subject, please contact the University of Wyoming IRB Administrator at 307-766-5320 or the Institutional Review Board for Human Participants (IRB) at www.irb.cornell.edu / irbhp@cornell.edu / 607-255-5138. You may also report your concerns or complaints anonymously through Ethicspoint or by calling toll free at 1-866-293-3077. Ethicspoint is an independent organization that serves as a liaison between Cornell University and the person bringing the complaint so that anonymity can be ensured.

I agree to participate in this research as described here:

_____
Your name, printed

_____ _____
Your signature Date

By checking this box, I also agree to have interviews audiorecorded (noting these can be paused, stopped, or deleted upon my request): ☐ your initials: _____

Researcher's statement of commitment: *I, _____, commit for myself and on behalf of the research team to abide by the terms outlined in this document both in letter and in spirit.*

Researcher's Signature _____ Date _____

APPENDIX C – SEMI-STRUCTURED INTERVIEW GUIDE

Team GROW Interview Guide
2014 Gardeners

1. What do you get out of gardening?
    a. What has surprised you in terms of outcomes from gardening?
    b. How did your expectations compare to what you actually got out of gardening?
2. How does growing your own food impact you and your household?
3. In what ways has growing your own food impacted your quality of life?
    a. How has your diet been affected by growing your own food? If so, how?
    b. Your grocery shopping habits?
    c. How has gardening affected your health?
        i. Physical activity?
4. Would you recommend growing one's own food to other community members? Why or why not?
5. Based on your Team GROW report, I see that you shared ____ % of your food in the ___ season (multiple seasons if applicable). Can you tell me more about how you use your harvest? How has growing your own food impacted how you share your food with others?
6. Tell me about your experience participating in Team GROW for the past 2 years.
    a. What have you thought about your results? Both individual and Team GROW as a group?
    b. Do you feel that Team GROW or gardening in general have impacted your involvement with or connection to the local community? If so, how?
    c. Has it changed your views surrounding community food security in Albany Co? If so, how?
    d. Did your participation influence your gardening practices in any way?

       If so, how?
    e. What did you like about participating in Team GROW?
    f. What didn't you like about participating in Team GROW?
    g. Do you have any recommendations for the project?
7. Is there anything else you would like to add about any aspect of Team GROW or food gardening?