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### COMMUNITY GARDENERS IN LANSING, MICHIGAN: EDUCATION, MOTIVATION AND THEIR RELATION TO FEELINGS ABOUT PEST CONTROL

Ву

Susan M. Corcoran Pigg

#### A THESIS

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Department of Resource Development

#### ABSTRACT

### COMMUNITY GARDENERS IN LANSING, MICHIGAN: EDUCATION, MOTIVATION AND THEIR RELATION TO FEELINGS ABOUT PEST CONTROL

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By

Susan M. Corcoran Pigg

This thesis examines community gardeners' characteristics and their feelings toward pest control in the Self Help Garden Project of Lansing, Michigan. A history of community gardening is included. In a survey by mailed questionnaire, program participants described their level of education, their reasons for participating in the program and their feelings about pest control methods. Results indicated that respondents who community garden for economic reasons feel more positively about pesticides and are more likely to use them in their community garden plot. Those who participate to make friends or improve their community were also more likely to feel friendly toward pesticide use. Those who garden to improve their health and emotional wellbeing were divided on feelings about pesticides. There was no strong relationship between respondent's level of formal education and their feelings about pest control. However, there was evidence that skepticism of pesticides increases as education level increases.

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This research effort is dedicated to the participants of the Self Help Garden Project. They have shown that community gardeners make good neighbors and wonderful friends. I also dedicate this effort to a special gardener, my husband Robert W. Pigg, whose unflagging support and enthusiasm have made this research possible.

#### ACKNOWLEDGEMENTS

Without the participation and cooperation of a number of people, especially those mentioned here, this study would not exist. Their interest and participation is gratefully acknowledged.

\* The Self Help Garden Project garden coordinators and the program director, Jan Ryan.

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#### CHAPTER ONE

### INTRODUCTION

Gardening obviously provides food as an economic benefit. It can also serve as a source of social interaction and self improvement. For many individuals, especially urban dwellers, apartment residents and renters, land is not accessible for gardening. Many people in these settings have turned to a creative and practical solution, community gardening.

This study is focused exclusively upon community gardeners. They are identified, simply, as participants in community gardens. Community gardeners are different from persons who have a garden in their backyard or who farm a small plot of land they own. As J. Wagner points out in <u>A</u> <u>Handbook for Community Gardening</u>, "Community gardening is by definition a different experience from ordinary gardening because basic resources; land, water, and even sunlight, must be shared."<sup>1</sup>

The community gardens in which they participate present a unique combination of activities including food production, recreation, social exchange, and the development of community spirit and skills. The individuals come from a variety of educational backgrounds. They all face growing concerns about pesticide use.

<sup>&</sup>lt;sup>1</sup>Judith Wagner, "Community Gardening: Growing Together" in <u>A Handbook of Community Gardening</u>, ed. by Susan Naimark (New York: Charles Scribner and Sons, 1982), p.4.

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This study is designed to examine the following question: Does a relationship exist between community gardeners level of education or their reasons for participating in a community gardening program and their feelings about pest control methods. The data presented in this study are the results of a questionaire sent to participants of the Self Help Garden Project, a community gardening program in Lansing, Michigan.

### PURPOSES OF THIS STUDY

This study was prompted by the author's experiences working with and participating in the Self Help Garden Project of Lansing, Michigan. Over two summer gardening seasons, I had informal discussions with many participants in the program. Conversations often concerned reasons for gardening and the types of people who participate in a community garden. I also observed the use of pesticides by some gardeners and the opposition to pesticide use from others. I began to wonder if a predictive model for community gardener's use of pesticides could be developed. The development of such an instrument would consider factors that may influence a gardeners' practices such as the gardeners' educational background, their reasons for participating in a community garden, as well as their attitudes toward pesticide use.

Ľ g There are a variety of reasons for conducting a survey of the perceptions of community gardeners. While there have been studies published on attitudes toward the environment and on the relationship of education to environmental attitudes and practices, little of this has been directly linked to the actions of community gardeners. Likewise, studies have delved into the possible relationships between environmental attitude and pesticide use by farmers. But, these studies have a limited applicability to community gardeners because of the vast differences socially, economically and educationally between farmers and community gardeners. Community gardeners can serve as an indicator group of urban dwellers who interact with their environment as well as demonstrate that interaction through their actions in the garden.

Understanding the factors influencing pesticide use by urban dwellers can assist environmentally concerned citizens in developing and implementing reforms and restrictions. The survey results could provide information to urban planners and environmental regulators involved in planning programs on pesticide use.

Characterization of the gardeners participating in the project can help community and garden program planners tailor activities to participants' specific needs. Understanding the educational backround of community gardeners, their reasons for participating in a community

garden and their perceptions about pest control could shed some light on possible paths the project may take in its' efforts to expand and provide education to the participants. They may also find the survey information helpful when allocating resources within the project to reduce costs and increase the effectiveness of their programs.

Information on urban gardeners whose income and location necessitate community gardening, could prove useful to organizations working with those populations in areas of nutrition or environmental protection and conservation. Urban gardeners are involved publicly in their local environment. Their feelings and views could serve as an guide to officials and planners concerned with the environment in urban areas. In Lansing, where this research was conducted, those organizations include the Michigan State Cooperative Extension Service, the Michigan Department of Social Services, the Department of Natural Resources, the Soil Conservation Service of the United States Department of Agriculture and others.

### THE SELF HELP GARDEN PROJECT

The Self Help Garden Project (SHGP) is a non-profit community gardening program in Greater Lansing, Michigan. It is a direct affiliate of the Greater Lansing Food Bank (GLFB). The GLFB is a non-profit organization comprised of volunteers; elected officials, public service agency

personnel, and local citizens. The management structure includes a 25 member board of directors, a director, and paid staff members. The GLFB was formed to meet emergency food needs of victims of the 1980 recession. Its primary purpose was to collect and distribute food donations to needy families in the Greater Lansing. The average number of families requesting aid increased dramatically from 1981 to 1988,<sup>2</sup> and reached even higher levels in 1990-1991.

In addition to supplying emergency food supplies, board members felt that a design for a long term solution was needed to meet the increasing demand for food amongst area residents. Early in its operation, the GLFB became involved in a pilot gardening program. By promoting such a self help program, area residents could help provide for themselves. With the support of GLFB and a grant from the Gannett Foundation, the SHGP became a component of the GLFB's program in 1982.<sup>3</sup> The GLFB board elects a nine member Garden Committee which meets monthly to review the plans and progress of the SHGP.

The SHGP's purpose is to supplement direct assistance by providing families an opportunity to produce additional

<sup>&</sup>lt;sup>2</sup>Poonam Sreen and Rex LaMore, <u>Community Economic</u> <u>Development- Case Studies in Michigan.</u> (East Lansing, Michigan: Michigan State University Center for Urban Affairs and Department of Resource Development, 1988), p.61.

<sup>&</sup>lt;sup>3</sup>Mary Keiselbach, in presentation to Self Help Garden Project Garden Coordinators (Ingham County Social Services Building, Lansing, MI.) 7 P.M., August 23, 1990.

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food.<sup>4</sup> They hope to increase the ability of low income area residents to become more self reliant in acquiring nutritious food.<sup>5</sup> As such, according to the 1989 Annual Report on the project, "the Self Help Garden Project is gaining a reputation as the community development aspect of the GLFB."<sup>6</sup>

The Self Help Garden Project, provides a range of opportunities and services to program participants. It provides roto-tilling service on a "pay what you can" basis, for area residents who wish to plant a backyard garden. SHGP volunteers glean crops from local farms for distribution to the needy through the GLFB. The program has also been involved in community awareness and education efforts on composting. The most significant component of the SHGP is the Community Gardening program. Through grants and donations, the SHGP is able to provide participants with free seeds, fertilizer, and seedlings, gardening and food preservation classes, and a bimonthly newsletter.<sup>7</sup>

<sup>6</sup>Smith-Sreen, p. 3.

<sup>7</sup>Self Help Garden Project, <u>Fact Sheet of the Self Help</u> <u>Garden Project</u> (Lansing, MI., 1990).

<sup>&</sup>lt;sup>4</sup>John D. Smith-Sreen, <u>The Self Help Garden Project of</u> <u>the Greater Lansing Food Bank Annual Report 1989</u>, (Lansing, MI: SHGP, December 14, 1989), p. 3.

<sup>&</sup>lt;sup>5</sup>Ann Sumagaysay and Lucy Winchester, <u>Oak Park Gardeners</u> with the Lansing Area Self Help Garden Project: Motivations, <u>Needs, and Benefits Derived from Participation</u> (E. Lansing, MI: Michigan State University Dept. Agriculture Economics 868 Research Paper, August 25, 1989), p. 2.

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Similar in design to many community gardening programs<sup>8</sup>, participants receive at least one 25 x 25 foot plot of land to crop in one of its' twenty garden sites throughout the Lansing area. Some participants work more than one plot in a single garden, or in more than one garden. There are separate gardens located throughout the Lansing metropolitan area. Some are large (200 plots) and some are small (4 plots). Some are located in urban, residential areas, some are in outlying open fields near the city, some are in the yards of churches and schools.

All of the participants are community gardeners, however, there is an identifiable character to each garden group, much the same as one might find in the various neighborhoods of the city. The character is created by the number and experience of the members, by the age of the garden and it's location in the metropolitan area. The amount of participation in the garden, with fellow gardeners, and the general ethnic and economic makeup of each group of gardeners are some of the factors which contribute to the sum character of each garden.

<sup>&</sup>lt;sup>8</sup>American Community Gardening Association (ACGA), <u>The</u> <u>1990 Preliminary report on the National Community Gardening</u> <u>Survey (Philadelphia, PA.: Education Committee of the</u> American Community Gardening Association, 1990), p. 7-22.

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### **PROFILE OF SHGP PARTICIPANTS**

SHGP includes an impressive number of participants. The project advertises for participants through the local newspapers and with fliers sent to social service agencies and neighborhood groups. Applications are also sent to previous program participants. One survey of a garden project garden indicated that 77% of those questioned had gardened with the project in a previous season.<sup>9</sup> Participants include over 500 residents of the Lansing and East Lansing area. In 1988, there were 365 community gardeners in the program. In 1989, 350 families were members and by 1990, there were over 400 families community gardening with the SHGP.

SHGP participants come from a variety of backgrounds. The primary participants are low income families. Project survey results indicate the average family size was 3.2 in 1989 (Table 1). The survey also indicated that one third of the community gardeners had a family income of less than \$10,000 per year. The average family income was \$15,567 with a bimodal distribution (Table 1). That is to say, 56% of the gardeners had an average family income of \$6,520 and 44% had family incomes averaging \$26,875.<sup>10</sup>

Over 50% of the program's participants are members of minority groups (Table 1). This statistic appears to be

<sup>&</sup>lt;sup>9</sup>Sumagaysay, p.3.

<sup>&</sup>lt;sup>10</sup>Smith-Sreen, p. 3.

relatively stable over the time the project has been reviewed. Survey data in 1986 showed the following: 36% Hmong/Lao, 1% other Asian, 19% Black, 2% Hispanic, and 42% caucasian.<sup>11</sup> Similarly, the 1989 survey indicated the following ethnic/racial makeup of gardeners; 39% Hmong/Laotian, 11% Black, 5% Hispanic, and 45% were caucasian.<sup>12</sup> The ages of participants vary but all the primary gardeners are adults.

Table 1. Community Gardeners in the Community GardenProject, 1989

AVERAGE ANNUAL	(\$15,567)								
	56% families= < \$6,520 44% families= \$26,875								
AVERAGE FAMILY SIZE			3.2						
ETHNIC/RACIAL MAKEUP	Hmong/ Lao 39%	Black 11%	Hispanic 5%	Caucasian 45%					

<sup>12</sup>Smith-Sreen, p. 2.

<sup>&</sup>lt;sup>11</sup>Sreen, p. 61.

### THE HYPOTHESES AND NULL HYPOTHESES

Relying upon the author's experiences with community gardeners and a literature review, the following variables of this study were identified:

1. Level of Education.

2. Motivation for community gardening.

3. Feelings about pest control methods.

In a survey of community gardeners, respondents indicated their level of formal education. They provided an indication of their non-formal learning level by responding to statements about their feelings toward methods for learning gardening.

Community gardeners expressed their motivations for participating in a community garden by their agreement or disagreement to a list of reasons for community gardening. They also ordered a series of motivations for community gardening from most to least important. The motivations for gardening fell into three basic catagories; self-betterment, economic, and social interaction.

Community gardeners' feelings about pest control methods in the community garden were assessed from responses to statements about pesticide use and integrated pest management practices. Respondents who expressed fear of pesticides and did not use them were classified as "pesticide unfriendly". Those who used pesticides and felt that pesticides were necessary and safe were considered

"pesticide friendly" in this study. Respondents also noted which pest control methods they had used in their community garden plot and the amount of money they had spent on pest control during the 1990-1991 gardening season.

Survey respondents also were asked to respond to a variety of indicator or classifying questions about their gardening experience and their perceptions of the pest conditions in their garden plot. This information was gathered to assess possible relationships comparable in the literature about identifying factors.

The first two variables, level of education and motivation for community gardening, are considered independent variables in this study because they describe characteristics or traits of the gardener. Information collected about years of gardening experience, time spent in the garden plot, farming experience, and respondents' opinions of other community gardeners were also considered independent variables. The dependent variable is community gardeners' feelings toward pest control in the community garden. This study is based on hypotheses which assess possible relationships between the gardener's education level and their feelings about pest control methods. It also assesses possible relationships between the gardener's reason for community gardening and their feelings about pest control methods.

As a result of defining the above variables and proposing an analysis of their relationships, the following hypotheses were developed:

- <u>Hypothesis 1</u> = Community gardeners with a high level of education feel unfriendly towards pesticide use in the community garden.
- <u>Null Hypothesis 1</u>= Community gardeners' education level is not related to their feelings about pest control in the community garden.
- <u>Hypothesis 2</u> = Community gardeners with self-betterment or economic reasons for community gardening feel friendly toward pesticide use in the community garden.

Those who participate for social interaction will feel unfriendly toward pesticide use in the community garden.

<u>Null Hypothesis 2</u> = Community gardeners' motivations for community gardening are not related to their feelings about pest control methods.

#### CHAPTER TWO

### A REVIEW OF COMMUNITY GARDENING LITERATURE

A review of the literature pertinent to this study was concerned first with a general background on Community Gardening. A brief history of the movement provided the origins and definitions of community gardening. It also gave some descriptions of the structure of programs. An analysis of theories that have been presented in the literature, both implicitly and explicitly, on the reasons for community gardening was examined.

A review of literature for this study also included a review of information about perceptions of learning about environmental issues that concern urban community gardeners. Finally, there was a discussion of the theories and research on perceptions about pest control methods and the adoption of those methods.

### A HISTORY OF COMMUNITY GARDENING

The origins of community gardens go back to the patterns of land use in Europe. The Industrial Revolution in the mid 18th century accelerated the transition from a selfsufficient agricultural society to industrial, money-based economies. As rural peoples moved into cities, some recreated an urban version of the older feudal systems by

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renting plots of land on the outskirts.<sup>13</sup> Community garden plots, called allotments or "guinea plots"<sup>14</sup> were made available to these displaced persons in order to reduce the costs of public welfare.<sup>15</sup> Community gardening became a way to retain ties to the land in an urbanized world.<sup>16</sup> The allotment was a part of a tradition of criticism of modern urban industrial society and the kinds of surroundings it creates.<sup>17</sup> An allotment or community garden was many things to many people. The legal definitions of community gardening are found in a series of legislative acts from as early as the 1700's.<sup>18</sup>

By 1900, many nations had gardening programs. In Germany, Dr. Daniel Schreber (1808-61) allied with

<sup>14</sup>The term "Guinea Plot" is thought to have originated from the rent, one guinea per year, charged to families for the use of the allotment.

<sup>15</sup>Sam Bass Warner Jr., <u>To Dwell is to Garden: A History</u> <u>of Boston's Community Gardens</u> (Boston: Northeastern University Press, 1987), p. xiii.

<sup>18</sup><u>Ibid.</u>, p. 277.

<sup>&</sup>lt;sup>13</sup>According to one government investigation, the total relief bill for all of England totaled L700,000 in 1750. By 1818, it had risen to L8,000,000. Great Britain, <u>Departmental Committee of Inquiry into Allotments 1969</u> <u>Report</u>, (London: H.M.S.O, 1972), p. 2.

<sup>&</sup>lt;sup>16</sup>Charlotte Kahn, "Historical Roots: The History of Community Gardening," in <u>A Handbook of Community Gardening</u>, ed. by Susan Naimark (New York: Charles Scribners and Sons, 1982), p. 12.

<sup>&</sup>lt;sup>17</sup>David Crouch and Colin Ward, <u>The Allotment: Its</u> <u>Landscape and Culture</u>, (London: Faber and Faber, Limited, 1988), p. 157.

industrialists to allocate "leisure gardens" for university students to reduce drinking and promote healthy entertainment. In France, community gardens became part of the reform movement "to encourage early marriage and large families as antidotes to labor unions, strikes, and socialist politics." In Belgium, the gardening programs were tied to workingmen's cooperative banks. In Sweden and Norway, large allotments were given to city workers as compensation.<sup>19</sup>

During World War I in England, 1,300,000 urban gardeners "saved their nation from malnutrition, if not starvation, during the submarine blockade by the Germans."<sup>20</sup> Allotments in England are not only a part of history. The number of people who cultivate allotments and those on waiting lists in 1978 was 650,211, almost the same as at the end of World War I. The number of plots in 1988 was 50,000 more than in the best peacetime peak in the 1930's.<sup>21</sup>

In the United States, community gardening also claimed a long history. As a result of severe food shortages in 1893, Mayor Hazen S. Pingree of Detroit, Michigan initiated a unique form of unemployment relief by setting aside vacant city land for community gardens. He called for owners to

<sup>&</sup>lt;sup>19</sup>Kahn, p. 12.

<sup>&</sup>lt;sup>20</sup>Ibid., p. 17.

<sup>&</sup>lt;sup>21</sup>Crouch, p. 81.

lend vacant land to the program so that the unemployed could raise sufficient potatoes to carry them through the winter. By 1895, 455 acres were under cultivation as "Pingree's Potato Patches" <sup>22</sup>. Almost a thousand families received plots, seed potatoes and planting instructions. An estimated \$12000 worth of crop was raised saving about \$9000 on the relief bill the city paid that year.<sup>23</sup>

In 1912, 150 acres in Minneapolis were cultivated as community gardens. Supporters cited improved sociability, health benefits, savings on food costs, and relief from the tensions of urban life as benefits to the community gardening program there.<sup>24</sup>

During World War I, planting urban war gardens was promoted as a civic duty by the National War Garden Committee, an affiliate of the American Forestry Association. About five million Americans maintained "war gardens". They produced an estimated \$520,000,000 worth of food which released US farm supplies for overseas shipment to the war effort.<sup>25</sup> The effort was renewed again during World War II when the Victory Garden Campaign was begun by

<sup>&</sup>lt;sup>22</sup>Thomas J. Bassett, "Community Gardening in America, A Handbook," <u>Brooklyn Botanic Garden Record</u> vol. 35 no.1 (Spring, 1976), p. 4.

<sup>&</sup>lt;sup>23</sup>Kahn, p. 13.

<sup>&</sup>lt;sup>24</sup><u>Ibid.</u>, p. 13-14.

<sup>&</sup>lt;sup>25</sup>Charles Lothrop Pack <u>The War Garden Victorious Its</u> <u>War Time Need and Its Economic Value in Peace</u>, (Philadelphia: J.B. Lippincott Co., 1919), pp. 16-17.

the Office of War Information and the Department of Civil Defense in 1944. Twenty million "victory gardeners" grew 40% of the fresh vegetables consumed in the United States that year.<sup>26</sup>

Another revival of interest in community gardening stemmed from politics of the 1960's. A 1965 law opened immigration to third world for the first time since 1924 and created an influx of residents from agrarian cultures. The Civil Rights movement created a climate where "welfare mothers, newcomers from the suburbs, and overseas immigrants can join together in garden associations"<sup>27</sup>.

Sharp increases in food prices and a growing concern about chemical additives in processed foods characterized the 1970's. People have linked the community garden with the movement to encourage healthy eating and good sources of food<sup>28</sup>. The interest in healthy eating, fresh food and organic growing found its natural expression in the community garden. It tied together ideals of self sufficiency and self reliance and indicated a renewed approach to food growing for its own sake.<sup>29</sup>

<sup>&</sup>lt;sup>26</sup>Patricia Baars, "Teaching with Documents: Victory Gardens in World War II," <u>Social Education</u> Vol. 50 no. 4 (April-May, 1986), pp. 317-318.

<sup>&</sup>lt;sup>27</sup>Wagner, p. 5.
<sup>28</sup>Crouch, p. 159.
<sup>29</sup>Ibid., p. 170.

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In 1984, the National Gardening Association surveyed community gardening programs throughout the United States. The programs which responded (29%) managed 12,316 garden sites that included a total of 126,539 plots on 91,758 acres of land. One out of every three programs surveyed offer community garden plots to the public.<sup>30</sup> Initial data from a two year (1990-1992) study by the American Community Gardening Association indicates that "neighborhood gardens" are the most common type of community garden. During the first year of the study, two thirds of their respondents said the rate of garden starts was increasing!In U.S. cities, many are gardening on vacant or abandoned lots. Urban renewal projects make vacant lots available to local residents and provide a range of services; land only, plowing, fertilizer, seeds, compost, water, fencing, and educational programs.<sup>31</sup> Today, many of community gardening programs use the "major site" concept. Twenty five to two hundred families garden in one local. The land is usually divided into plots, 25 to 30 foot areas. Some groups have communal plots or non-plowed perennial plots.

<sup>&</sup>lt;sup>30</sup>National Gardening Association <u>Special Report on</u> <u>Community Gardening in the U.S.</u> (Burlington, VT.: National Gardening Association, 1985), p. 1-2.

<sup>&</sup>lt;sup>31</sup>Susan York Drake and Roberta Lawrence, <u>Recreational</u> <u>Community Gardening: A Guide to Organization and</u> <u>Development</u>, (Washington, DC: U.S. Department of the Interior Bureau of Outdoor Recreation, 1976), p. 1.

The American Community Gardening Association conducts research on the community gardening movement in the US, maintains a resource center, and serves its member organizations' information needs with newsletters and annual conferences. A National Federation of City Farms and Community Gardens, in England, was formed in 1980 in response to the needs of many different community gardening groups. It was a mutual support and development organization for community gardening programs. <sup>32</sup> The Self Help Garden Project, like many other current programs, is a network of many smaller community gardens. By joining efforts, they were able to achieve economies of scale for services and supplies.

According to Drake, a typical organizational structure of a community gardening program includes an agency or department at the top. A gardening program director is appointed or hired. The director administrates the program, using a site committee, site coordinator, and volunteers. These people work directly with the families gardening at a garden site. Drake describes the characteristic of the most successful programs as a high level of interagency cooperation such as between recreation departments, social service agencies, garden clubs, and businesses.<sup>33</sup>

<sup>&</sup>lt;sup>32</sup>Lin Whitfield, "City Farms: Livestock in Urban Communities," <u>Community Development Journal</u> Vol.22 no.3, (July, 1987), pp. 242-246.

At the time of this study, there were community gardening programs in major cities across the United States. A 1988 National Gardening Association survey conducted by Gallup Poll indicated that 12 million more households, three out of four households in urban areas, would garden in community gardens if land were available to them.<sup>34</sup>

# COMMUNITY GARDEN PROGRAMS

In 1992, there were as many purposes to community gardening as there were reasons to participate.

"A community garden is: a place to go... to learn and educate; To feel as part of the natural earth (the bricks and mortar are the elements of the environment that create anxiety and pessimism); To develop a mechanism for communication, information sharing and networking; To preserve and provide for the highest and best use of natural resources; To reduce the expenditure of cash for food and exchangeable materials; To have peace of mind; A community garden is a place to go to communicate with earth, nature, and oneself." <sup>35</sup>

From an administrative viewpoint, community gardens could educate participants, promote food production, facilitate community development, and provide recreational opportunities to inner city residents. Community garden participants might express all of the above when describing

<sup>34</sup>National Gardening Association, p. 6.

<sup>35</sup>Lloyd A. Harding, Organizer of the Forest Street Garden, Roxbury, MA. in Wagner, p. 4. reasons for community gardening and include yet more; exercise and relaxation, an opportunity to control land use in their neighborhood and beautify their surroundings, and a chance to increase their economic status by becoming more self sufficient and as a forum for social interaction, .

Reasons for community gardening were presented in the literature implicitly and explicitly. Explicit reasons were found in the goals expressed by various programs. Implicit reasons for participation were in the assumptions made by analysts in surveys of programs and by comments from program participants. A review of literature provided a view of these reasons from both the gardener's perspective, as well as from the programmer's viewpoint. This section will incorporate these different perspectives to describe reasons for community gardening that include self improvement, recreation, education, economic reasons and community development.

Psychologists and educators like Edward Spranger<sup>36</sup> and Baker<sup>37</sup> have proposed a rank order of values which are reflective of differing social contexts. Included were such motivating values as "economic", interest in the useful; aesthetic, interest in form and harmony; and social,

<sup>&</sup>lt;sup>36</sup>Edward Spranger, <u>Types of Men: The Psychology and</u> <u>Ethics of Personality</u>, (New York, Strechert-Hafner, 1928).

<sup>&</sup>lt;sup>37</sup>Milton R. Baker, Rodney L. Doran and Alfred A. Sarnowski, "An Analysis of Environmental Values and their Relation to General Values," <u>Journal of Environmental</u> <u>Education</u> Vol. 10 no.1, (Fall, 1978), p. 39.

interest in human relations.<sup>38</sup> Using this idea of values as expressed on environmental issues, this study identifies reasons for community gardening that clearly express a hierarchy of needs, a ranking of motivations for community gardening according to the needs or desires of the respondent; self-betterment, economic, or social interaction. Reasons for participation in a community garden can be classified categories ranging from a motivation for self improvement, to a means for economic survival, to the fulfillment of social interaction needs and improvement of the community.

Some reasons for community gardening, both social and political, can be found in the arguments of its opponents. Historically, farmers who hired the urban poor feared that employees would spend too much time for their own benefit or that they would become independent from the production of their allotments and drive up wages. Edwin Chadwick, an English public health reformer, claimed that gardens would encourage the poor to stay home instead of moving to seek employment. John Stuart Mill saw allotments as rewarding less ambitious families. He warned that village gardens would cause "the shiftless to rest in their village garden, have babies, and thereby so multiply that in time they would impoverish all of England".<sup>39</sup> More recently, Glaser

<sup>&</sup>lt;sup>38</sup>Ibid., p. 35-6.

<sup>&</sup>lt;sup>39</sup>Warner, p. 9.

claimed that garden development programs did not require support from the community to mold programs to meet the needs of the community. As such, they were less favorable as service delivery programs.<sup>40</sup>

However, as early as the 1800's, the benefits of community gardening were described in multiple terms. According to the record of a "guinea garden" in Birmingham England, "This ... is highly beneficial to the inhabitants. They (gardens) promote healthful exercise and rational enjoyment among families of the artisans and with good management, produce an ample supply of those healthful vegetable stores, which are comparatively seldom tasted by the middling classes when they have to be purchased."<sup>41</sup>

In his analysis of the Detroit Urban Gardening Program, Abbott defines reasons for community gardening in three categories, family outcomes, community outcomes and individual outcomes. Family outcomes include increased family interactions and economic benefits through reduced food costs. Community outcomes encompass increased interaction between neighbors and increased helping behavior among neighbors by sharing food from the garden. Individual

<sup>&</sup>lt;sup>40</sup>Mark A. Glaser, "Redefinition of the Service Delivery Function of Community Based Organizations," <u>The Journal of</u> <u>the Community Development Society</u> Vol. 17 No. 1, (January, 1986), p. 103.

<sup>&</sup>lt;sup>41</sup>James Drake <u>A Picture of Birmingham: 1825</u>, quoted by Mary Lee Coe in <u>Growing with Community Gardening</u>, (Taftsville, VT: The Country Press, 1978), p. 12.

outcomes are expressed in terms of the number of gardens and their quality and continued program participation.<sup>42</sup> In a survey of program participants, responses about the impact of the program on participants included: "put food on the table," "personal satisfaction," "brought family closer together," "brought neighbors closer together," and "was a learning experience".<sup>43</sup>

The National Gardening Association's 1985 survey showed that gardener's three main reasons for community gardening were better tasting and more nutritious food, to save money, and exercise (Table 2). Other reasons for participation included therapy, education, social interaction, neighborhood involvement and to have a family activity.<sup>44</sup> These reasons and others were incorporated into the list of motivations for community gardening presented in the questionaire for this survey.

<sup>&</sup>lt;sup>42</sup>Ralph Abbott, Keith Adler, and Carol David, <u>An</u> <u>Evaluation of the Detroit Urban Gardening Program</u>, (E. Lansing, MI: Michigan State University Center for Urban Affairs of College of Urban Development, 1978), p. 9.

<sup>&</sup>lt;sup>43</sup><u>Ibid.</u>, p. 9.

<sup>&</sup>lt;sup>44</sup>National Gardening Association, p. 2. The survey questionnaire was designed so that respondents could express more than one reason for community gardening. As such, the percentages are not exclusive.

REASONS FOR COMMUNITY GARDENING	RESPONSE(% of allrespondents)
Better tasting, more nutritious food	42%
To save money	398
Exercise	36%
Therapy	33%
Education	32%
Social interaction	29%
Neighborhood involvement	14%
To have a family activity	14%

Table 2. 1985 National Survey of Reasons for Gardening<sup>45</sup>

<sup>45</sup>Ibid., p. 2.

### REASONS FOR COMMUNITY GARDENING

# SELF IMPROVEMENT

Hayward Ford, president of Aspen Farms Community Garden in West Philadelphia, described his community garden as "peaceful and therapeutic." "I come here so tired that I can hardly open the gate, but I can stay here and work all day and think about the garden and nothing else."<sup>46</sup> Horticultural psychology and horticultural therapy other offshoots of the movement, attempt to quantify and employ the enriching effects of plants and gardening on humans.<sup>47</sup>

The Community Action Commission Garden Program in Madison, Wisconsin has a program goal "To build self esteem through self help empowering activities." Similarly, the Cincinnati Metropolitan Residents' Advisory Authority Board, Inc., the Mountain Area Gardeners In Communities (MAGIC) in Asheville, North Carolina and many others hope to "encourage a justified pride in personal and shared accomplishments" and "encourage residents to become more self-sufficient."<sup>48</sup>

<sup>48</sup>American Community Gardening Association, p. 12.

<sup>&</sup>lt;sup>46</sup>Ginny Weigand, "Philadelphia, A Well Cultured City," <u>The Philadelphia Inquirer</u>, (August 6, 1990), p. 6B.

<sup>&</sup>lt;sup>47</sup>H.B. Tukey Jr., "Urban Horticulture- Horticulture for Densley Populated Areas," <u>Proceedings of the Twenty-first</u> <u>International Horticultural Congress Vol. II</u>, (Hamburg, Germany: International Society for Horticultural Science, 1982), p. 1110.

#### RECREATION

Community gardens often provide a base for expanded recreation possibilities.<sup>49</sup> Youth gardens are sponsored by Parks and Recreation organizations, Scouts, 4H and others. They operate independently or are a part of a larger community garden. Wagner points out that community gardening is a major source of outdoor recreation.<sup>50</sup> The activities there provide physical, healthful exercise for participants.

# EDUCATION

Demonstration or teaching gardens often have a meeting building to serve as a central source of information and as a catalyst for new gardens. The University of Man, in Manhattan, Kansas, maintains a community garden farmed by 100 families. The garden is part of a program which uses volunteers to teach topics ranging from human rights to support of folklife artists in their facilities.<sup>51</sup> Many programs use the garden to "involve and educate children about nature through gardening" as in the Neighborhood Gardens program in Cincinnati, OH.<sup>52</sup>

<sup>49</sup>Susan York Drake, p. 1.

<sup>50</sup>Wagner, p. 4.

<sup>51</sup>University for Man, <u>University for Man Annual Report</u> <u>for 1981</u>, (Manhattan, KS.: University for Man, 1982).

<sup>52</sup>American Community Gardening Association, p. 14.

a C p P C 0 ti t ņ p a f e d W( C Þ bę e, to In Detroit Michigan, the urban gardening program is administered with the help of the Michigan State University Cooperative Extension Service. The program's purpose is to provide an alternative source of food to low income persons. Program administrators also hope to provide training to create leadership amongst community based people.<sup>53</sup>

In Ann Arbor Michigan, Project Grow maintains a network of seven community gardens throughout the area. In addition to providing gardening space to area residents, they promote the donation of excess crops to local food closets for the needy, offer workshops on home canning and food preservation, provide information on pest control, and have a continuing program in home composting education.

Community gardening serves as an educational resource for environmental awareness and concern. Plots provide encounters with food production and stimulate personal development by contact with the environment in a relaxed but work like atmosphere. The purpose of the City Farms and Community Gardens project in the United Kingdom is "to provide facilities and opportunities to urban dwellers to become actively involved with growing and living things everyday." The program hopes to help urban residents "come to terms with realities and understand food production." <sup>54</sup>

Community gardening is a common ground for people who

<sup>&</sup>lt;sup>53</sup>Abbott, p. i.

<sup>&</sup>lt;sup>54</sup>Whitfield, p. 242.

share a love of the earth and a concern for and an understanding of the life cycles and intricacies of natural systems.<sup>55</sup> Whitfield wrote that one of the benefits of community gardening was to reintroduce some sort of "ecological balance" to urban areas.<sup>56</sup> Increased contact with the soil and natural systems makes people more aware of the fragile nature of the environment. Wagner also described the "sheer wonder and joy of helping things grow", "outdoor work bringing people in contact with sun, air, rain and earth" and the importance of improving environmental quality. Community gardens provide green space to renew oxygen and improve water absorption through cultivated urban soiil.<sup>57</sup> Residents become stewards of the land. They transform lots that were health and safety risks and diversify the landscape, improving local environmental conditions.<sup>58</sup> One of the goals of the Isles Garden City Greening Program in Trenton, NJ is to "increase public awareness concerning the importance of open space."59

<sup>&</sup>lt;sup>55</sup>Wagner, p. 5.
<sup>56</sup>Whitfield, p. 243.
<sup>57</sup>Wagner, pp. 8-9.
<sup>58</sup>National Gardening Association, p. 1.
<sup>59</sup>American Community Gardening Association, p. 11.

### ECONOMIC REASONS

One analysis of the 1977 National Food Consumption Survey concludes that "savings were an important consideration in the decision to garden."<sup>60</sup> The popularity of vegetable gardens in the United States has been correlated with decreased buying power.<sup>61</sup> Recent surveys show that the financial benefits of gardening rank first on a list of reasons for planting home and community gardens.<sup>62</sup> Wagner points out that community gardening helps ease financial strain by providing the economic benefits of food production."<sup>63</sup>

<sup>60</sup>J. R. Blaylock and A. E. Gallo, "Modeling the Decision to Produce Vegetables at Home," <u>American Journal of</u> <u>Agricultural Economics</u> Vol. 65 (1983), pp. 722-729.

<sup>61</sup> Gardens for All, <u>Gardens For All/Gallup National</u> <u>Gardening Survey 1982</u>, (Burlington, VT.: National Gardening Association, 1982).

H. Kinnucan and B. Sexauer, "The Demand for Home-produced food by Rural Families," <u>American Journal of Agricultural</u> <u>Economics</u> Vol. 60 (1978), pp. 338-344.

C. H. Gladwin and J. Butler, "Gardening: A survival Strategy for the Small Part-time Florida Farm," <u>Proceedings of the</u> <u>Florida State Horticultural Society</u> Vol. 95 no. 2 (1982), pp. 264-268.

E. H. Kaitz and J. P. Weimer, "Home Grown Fruits and Vegetables and Their Use," <u>Veg. Situation</u> Vol. 210 (1976), pp. 31-34.

<sup>62</sup>David A. Cleveland, Thomas V. Orum and Nancy Ferguson, "Economic Value of Home Vegetable Gardens in an Urban Desert Environment," <u>HortScience</u> Vol. 20 No. 4 (August, 1985), p. 694.

<sup>63</sup>Wagner, p.7.

A survey of the general public in Detroit, Michigan found that 79.3% of respondents felt that gardening would reduce their food costs.<sup>64</sup> When participants of a community gardening program in the same area were surveyed, they indicated that the perceived net savings by gardening averaged \$39.90 per family.<sup>65</sup> Data gathered by the National Gardening Association's 1982 survey indicated that a garden plot could be from two to four times as productive as a farm per a square foot. A 600 square foot garden saves as much as \$500 per a year in food costs.<sup>66</sup> Using the most conservative figures available from surveys of community gardeners in the Boston, Massechussetts area, researchers concluded that the Boston Community Gardens produced over \$235,000 worth of food on approximately 50 acres total during the year 1982.<sup>67</sup>

Some researchers have quantified the economic benefits of gardening through more controlled studies. Cleveland et. al. estimated the net returns that could be expected from home gardening by average or low income households.<sup>68</sup> They conducted a three year study with data from actual home gardens. They measured inputs and outputs, not estimated

<sup>64</sup>Abbott, p. 15. <sup>65</sup><u>Ibid.</u>, p. 15. <sup>66</sup>National Gardening Association, p. 1. <sup>67</sup>Wagner, p. 6. <sup>68</sup>Cleveland, p. 694. them as is done in other surveys. Their data indicated that the net returns per a garden were \$44 to \$652. They judged these based upon the current market value of the vegetables raised and the necessary inputs including water and pest control. Water prices during a dry season in some gardens explained the large variation in returns. They also found that net hourly returns to labor were from \$1.14 to \$13.60.<sup>69</sup>

# COMMUNITY GARDENING AS COMMUNITY DEVELOPMENT

Networks of community gardens, programs that support and ally neighborhood groups are one example of urban dwellers addressing a multitude of unmet needs. Many community gardening programs emphasize their community development aspects for the purpose of urban revitalization and neighborhood building. Of twenty seven programs profiled in the 1990 ACGA preliminary report, eleven programs specified community and neighborhood development as one of their program goals.<sup>70</sup> Community gardening "certainly qualifies" as community development according to Susan Redlich.<sup>71</sup> It calls for the cooperation among and self help efforts by neighbors.

<sup>69</sup><u>Ibid.</u>, p. 15.

<sup>70</sup>American Community Gardening Association, pp. 48-60.

<sup>&</sup>lt;sup>71</sup>Susan Redlich, "The Public Role," in <u>A Handbook of</u> <u>Community Gardening</u>, ed. by Susan Naimark, (New York: Charles Scribner and Sons, 1982), p. 35.

Wagner purports "community gardening challenges the social and economic structures that keep a vast number of people from owning land and from gaining a small measure of control over their lives."<sup>72</sup> Community gardening affords people a measure of control. Participants from inner city neighborhoods can develop feelings of control over their own destiny. They decide what to plant and harvest, and they gain new status as gift giver when produce is harvested.<sup>73</sup>

According to Tukey, gardening is a "safety valve of society" particularly in the "pressure pot atmosphere" of modern cities. Reports show the beneficial effects of plants and gardens on social interactions in inner city ghettos.<sup>74</sup> The garden improves the appearance of city land and encourages residents beyond the gardeners themselves. A New York City housing authority sponsored garden program produced specific gains in human and social betterment as well as the aesthetic rewards expected. Vandalism reduced in areas where there were gardens. Similar results have been shown by projects in Philadelphia and Chicago.<sup>75</sup>

This benefit is not always the planned result of community garden programs. Greishop found that a gardening

<sup>&</sup>lt;sup>72</sup>Wagner, p. 10.

<sup>&</sup>lt;sup>73</sup>Weigand, p. 6B.

<sup>&</sup>lt;sup>74</sup>Tukey, p. 1114.

<sup>&</sup>lt;sup>75</sup>Charles A. Lewis, "People Plant Interaction A New Horticultural Perspective," <u>American Horticulturist</u> Vol. 52 No. 2, (Summer, 1973), p. 22.

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program intended to disseminate horticultural information actually had a serendipitous effect on community development knowledge, skills and experience. Wireman examined the USDA's Cooperative Extension urban gardening program created by Congress in 1977. She paid particular attention to "spill over" effects. Beyond the original purpose of providing low income peoples with the skills to produce and use food, community gardening can be a way to promote better family relations, leadership development, and is a chance for people to meet and socialize with neighbors.<sup>76</sup>

The National Gardening Association described "a better sense of community" as a benefit to community gardeners.<sup>77</sup> They explain that community gardens become a social focus point, the first step to restoring neighborhood spirit and cooperation. Community gardening provides a meeting ground for people of all sorts. No matter who they are, they all have something in common, their neighborhood garden. The garden gives them a specific goal and visible proof of success. It bridges the gap between neighbors and reduces the isolation which is cause and effect of failures to improve the community situation in "unstable" urban communities. It shows that people care, that they dare to

<sup>&</sup>lt;sup>76</sup>Peggy Wireman, <u>Urban Neighborhoods, Networks, and</u> <u>Families: New Forms for Old Values</u>, (Lexington, MA: Lexington Books, 1984), p. 130.

<sup>&</sup>lt;sup>77</sup>National Gardening Association, p. 3.

U Γ g i С 0 С r P: ir de ga li un ar. en invest in their community and demonstrate their commitment to land and community.<sup>78</sup>

In Philadelphia, more than 6,000 people work in a network of 500 community gardens across the city. The program, Philadelphia Green, is sponsored by the Pennsylvania Horticultural Society and Pennsylvania State University's Urban Gardening Program. It has become a national model. According to the Philadelphia Inquirer, gardens in the heart of the city are "more than a garden. It is where the neighborhood women and families barbecue chicken, gossip, laugh, and have fun." It is the embodiment of the idea Tessa Huxley, president of the American Community Gardening Association calls "outdoor living rooms."<sup>79</sup>

Lewis notes that a primary reason for urban garden programs has been as a "cosmetic cover over social wounds" in the inner city. But, he feels, this echoes of a much deeper involvement. The subjective values found in a "ghetto garden" include life enhancing qualities introduced into a life negating urban situation. He believes that the underlying purpose is to form a sense of community which arises from spontaneous action, a sense of mastery over the environment, and a degree of control felt by participants.

<sup>&</sup>lt;sup>78</sup>Wagner, p. 9.

<sup>&</sup>lt;sup>79</sup>Weigand, p. 6B.

A community garden can also can be a focus of social activities which result in pride in accomplishing a garden despite the difficulties encountered in urban areas.<sup>80</sup> Whitfield emphasizes that the social value of community gardens must be considered at a time when traditional communities are being disrupted by housing policies and unemployment.<sup>81</sup> Wagner explains that a community garden is first and foremost a place where people share basic resources. This sharing makes some degree of cooperation necessary. She adds that community gardening can be a focal point for community events, facilitating the passing of social culture, and producing friendships with others who share an enjoyment in growing plants."82 Community gardening can have an invigorating effect on community self help. The gardens can be a catalyst for hopes and aspirations of people in decaying urban environments.

The Bronx Green-Up Gardens program's goal to make the Bronx a greener, healthier and more beautiful borough in New York City. As a group, participants have addressed other issues affecting their quality of life in urban settings by supporting campaigns for voter registration and recycling. They also hold community garden parties, festivals at

<sup>80</sup>Lewis, pp. 21-22.
<sup>81</sup>Whitfield, p. 223.
<sup>82</sup>Wagner, p. 5.

neighborhood gardens with games, activities, and prizes for area residents.<sup>83</sup>

### EDUCATION: IMPLICATIONS FOR ENVIRONMENTAL FEELINGS

There have been formal and informal correlations drawn between a persons' level of education and their feelings, attitudes and practices toward the environment. These studies are significant in an examination of the environmentally affecting practices of community gardeners. Researchers and program planners have assumed that program participants with a higher level of formal education are also more knowledgeable in topics, such as gardening and pest control, that are taught in non-formal settings. However, there is little information available on the education level and practices of community gardeners, a group of people unique in their interaction with the environment.

Community gardening is an interaction between the gardener, their natural environment, and their social context. Examining the gardener's educational interface with these factors results in the study of environmental education observations and philosophies.

LaHart observed that planning social behavior through education presupposes a hierarchical ordering of nature in

<sup>&</sup>lt;sup>83</sup>Jennifer Fong, "Some Highlights of the Crotona Community Garden Party," <u>Green-Up Times</u> Vol. 4 issue 3 (Autumn-Winter, 1991), pp. 4-6.

terms of structure and function<sup>84</sup>. This reductionist education style is too restrictive for adult community gardeners. Adults take action based on the integration of their past experience. They fit new information into an already organized body of information.<sup>85</sup>

For example, in a needs assessment of Meridian Township Michigan residents, relatively few selected "traditional" education (workshops and classes) as high priority methods for learning. Their education preferences seemed to relate to their current level of pest management knowledge and their experience with in-yard pest problems.<sup>86</sup> It can be useful, then, to examine the education level of community gardeners from their perspectives of learning in addition to a perspective of formal education.

Formal education level in this study refers to the grade levels; elementary, high school, technical or trade school, college and post college. Non-formal education level

<sup>85</sup>Nancy MacDuff "Training Adult Volunteers," <u>The</u> <u>Journal of Volunteer Administration</u> Vol. 6 (Spring, 1988), p. 38.

<sup>&</sup>lt;sup>84</sup>David LaHart and Lehman W. Barnes, "A Holistic Scheme for Environmental Education Research," <u>The Journal of</u> <u>Environmental Education</u> Vol. 10 No. 2 (Winter, 1978-1979), pp. 24-30.

<sup>&</sup>lt;sup>86</sup>Frank A. Fear, Gary A. Simmons, Michael T. Lambur, and Bradley O. Parks, "A Community Development Approach to IPM: Anatomy of a Pilot Effort to Transfer IPM Information on Outdoor Vegetation to Suburban Homeowners," in <u>Urban Entomology: Interdisciplinary Perspectives</u> ed. by G. W. Frankie and C. S. Koehler, (New York: Praeger, 1985), p. 137.

refers to training and information people receive about gardening outside of the formal education system. These nonformal education experiences include workshops, books and newspaper articles, farming and gardening experience or information passed between people through conversation or demonstration. Education is considered using a scale based on Bloom's Taxonomy of Learning. Bloom proposed a series of stages for learners. They range from an initial or lower level of repetition and recall to a middle level of application to a top level of synthesis.<sup>87</sup>

Education has traditionally treated environmental issues in a science context. Today, that approach is being influenced by an emphasis on the relation of people to their environment. Another mode of education, perhaps called synthesis or composition, is just as important to scientific and natural resource understanding.

Environmental perception can provide synthesis.<sup>88</sup> Educators are accepting the proposition that values are and should be an important component of environmental education.<sup>89</sup> Sonnefield attempted to bridge the gap by developing a model of environmental personality and

<sup>87</sup>Benjamin S. Bloom, <u>Taxonomy of Educational</u> <u>Objectives</u>, (New York: David McKay Company, inc., 1964).

<sup>&</sup>lt;sup>88</sup>LaHart, p. 27.

<sup>&</sup>lt;sup>89</sup>Milton R. Baker, Rodney L. Doran and Alfred A. Sarnowski, "An Analysis of Environmental Values and their Relation to General Values," <u>Journal of Environmental</u> <u>Education</u> Vol. 10 no. 1 (Fall, 1978), p. 35.

behavior.<sup>90</sup> As in this study, he brings together personality variables that may account for the variability in environmental behavior. In Sonnefield's case, the interaction of cognitive and affective systems was determined to be a key factor influencing environmental behavior. The attitude-behavior relationship has been supported with studies by Fishbein and Ajzen. They argue that attitudes are a predisposition to respond in a consistent manner, are related to overt behavior and can be predictive.<sup>91</sup> This study, conducted with a self administered questionnaire, relies on the idea that an individuals' affective response may be inferred by what they say they would do.

A review of the literature indicated that there are assumptions that attitude affects behavior and that knowledge affects attitude. Burrus-Bammel calls this "the folklore of environmental education".<sup>92</sup> Researchers have frequently observed a positive relation between education

<sup>&</sup>lt;sup>90</sup>J. Sonnefield, "Social Interaction and Environmental Relationship," <u>Environment and Behavior</u> Vol. 4 No. 3 (1972), p. 267-277.

<sup>&</sup>lt;sup>91</sup>Icek Ajzen and Martin Fishbein, "Attitudinal and Normative Variables as Predictors of Specific Behaviors," <u>Journal of Personality and Social Psychology</u> Vol. 27 No. 1 (1973), pp. 41-57.

<sup>&</sup>lt;sup>92</sup>Lei Lane Burrus-Bammel, "Information's Effect on ttitude: A Longitudinal Study," <u>The Journal of</u> <u>nvironmental Education</u> Vol. 9 no. 4. (Summer, 1978), p. 41.

and environmental concern.<sup>93</sup> More than half of the authors in the Journal of Environmental Education during the period from 1973 to 1976 state directly the necessity of knowledge or attitudes as conditions of intelligent environmental policy making. There is a widespread assumption that increased knowledge leads to favorable attitudes to pollution abatement and earth-friendly gardening practices, in turn, lead to action promoting a better environmental guality.<sup>94</sup>

However, Buttel's 1981 study of variation in environmental attitudes of farmers indicated that education bore little to no relation to indicators of concern about environmental problems. Surveys indicated that education is inversely coordinated with environmental concern indicators to the same degree as it is positively correlated.<sup>95</sup> Donohue also concluded that the precept "education leads to greater acceptance of environmental protection activities" was wrong. He found that informed residents were simply able to express their own ideas more clearly with more

**<sup>95</sup>Buttel** and Gillespie, p. 402.

<sup>&</sup>lt;sup>93</sup>Frederick Buttel, Gilbert Gillespie Jr., Oscar W. Larson III and Craig Harris, "The Social Basis of Agrarian Environmentalism: A Comparative Analysis of New York and Michigan Farm Operators," <u>Rural Sociology</u> Vol. 46 No. 3 (1981), p. 393.

<sup>&</sup>lt;sup>94</sup>Charles E. Ramsey and Roy E. Rickson " Environmental *Cnowledge and* Attitudes," <u>The Journal of Environmental</u> <u>ducation</u> Vol. 8 No. 1 (Fall, 1976), p. 10.

information.<sup>%</sup> Ramsey examined attitudes that lead to reactions to programs on environmental quality. Attitudes, he found, are characterized by "non-rational, emotional factors" so that a logical pattern is not assured.<sup>97</sup> However, his study did support a relationship between knowledge toward environmental issues. Findings indicated that knowledge appears to lead to moderation.<sup>98</sup> Smith<sup>99</sup> found that the amount of formal education bore a slight negative correlation to what he defined as "favorable conditions for environmental concern".

Many tests have been done to measure environmental or ecological attitudes. In spite of their demonstrated validity, the "halo" effect surrounding environmental topics and the fact that most instruments convey to the respondent that the researcher is trying to measure things that are important causes for concern.<sup>100</sup> The role of education in

97Ramsey, p. 12.

98 Ibid., p. 18.

**99W.A Smith**, "Education and the Public Perceptions ncerning Clean Water and Air," Presented at the 12th uthEastern Conference on Measurement in Education irginia Polytechnic Institute and State University, 1973).

<sup>100</sup>Ted J. Born and Nelson E. Weiters, "Non reactive surement of orientation toward the Natural Environment," <u>rnal of Environmental Education</u> Vol. 10 No. 1 (Fall, 8), p. 41.

<sup>&</sup>lt;sup>96</sup>G. A. Donohue, C. N. Olien and P. J. Tichenor, "Communities, Pollution, and Fight for Survival," <u>The</u> <u>Journal of Environmental Education</u> Vol. 6 No. 1 (Fall, 1974), p. 3.

promoting environmentally sensitive practices in the garden comes under examination when one views its strength in the face of studies showing the role of attitudes and economic factors in decision making.

Reports on community gardeners in urban areas frequently focus on their "agricultural roots", their experience in rural farming settings. The reports imply that urban gardeners are an offshoot of farmers and illustrate similar responses to the environment. Findings about farmers' attitudes toward the environment provide the base upon which some urban community garden programs have built their educational programs.

According to Leagans, the adoption of innovations, such as those to protect environmental quality, requires a favorable mental attitude as well as a conductive environment.<sup>101</sup> Leagans developed a behavioral model for farmers' responses to innovation that includes social, economic, physical, institutional, and educational dimensions of a farmer's environment.<sup>102</sup> He demonstrated that farmers reach decisions through a system of judgmental rade-offs among positive and negative influences and

<sup>102</sup>Ibid., p. 23.

<sup>&</sup>lt;sup>101</sup>Paul J.Leagans, <u>Adoption of Modern Agricultural</u> <u>chnology by Small Farm Operators: An Interdisciplinary</u> <u>del for Researchers and Strategy Builders</u> (The Cornell ternational Agriculture Series Mimeograph 69, New York: rnell University and New York State College of Agriculture 1 Life Sciences, 1979), p. 4.

personal (internal) or environmental (external) influences.<sup>103</sup> Van Es claimed that certain farmers are always more willing to try new practices. He described them as having more education and thus, higher income, larger farms, and certain personality characteristics.<sup>104</sup>

The literature on socioeconomic measures of environmental concern generated consistent empirical regularities. For example, education correlated strongly with environmental concern in mass publics, yet significant controversies emerging may be traceable to non-comparable dependent variables and the multi-dimensionality of environmental beliefs.<sup>105</sup> Buttel found some inconclusive but suggestive findings regarding the role of economic security in facilitating pro-environmental attitudes among farm operators.<sup>106</sup> Leagans also describes an economic model of innovation adoption which suggests that incentives which promise significant economic gain provide a strong motive.<sup>107</sup> Pettus found that some environmental attitudes

<sup>103</sup><u>Ibid.</u>, p. 4.

<sup>104</sup>Johannes C. Van Es, "Dilemnas in Soil and Water Conservation Behavior of Farmers," (Diffusion of Innovations Research Report no. 2, E. Lansing, MI: Michigan State University Department of Communications, 1964), p. 238.

<sup>105</sup>Frederick Buttel and Donald E. Johnson, "Dimensions f Environmental Concern: Factor, Structure, Correlates, and mplications for Research," <u>Journal of Environmental</u> <u>ducation</u> Vol. 9 No. 2 (Winter, 1977), p. 49.

<sup>106</sup>Buttel and Gillespie, p. 391.
<sup>107</sup>Leagans, p. 18.

influence or preclude development of other environmental attitudes. Elements like economics and convenience will, he found, dictate responses even when people are aware of the facts and know what behavior will bring about the desired conditions and may affect responses.<sup>108</sup>

Situational factors like residence, age, marital status, and family size have been found to affect concern about environmental quality and willingness to support governmental control of pollution sources.

In Donohue's study of an urban community, the pluralism of the community was a stronger predictor of opinions on these issues than was the educational level of individual respondents.<sup>109</sup> Donohue found that the attitudes on specific issues of environmental protection varied according to the amount of impact of the issue on local situations.<sup>110</sup>

Community gardeners hold a variety of positions in society. There are several studies that compare the perceptions of different professional groups like engineers and public officials and students, conservationists, and

<sup>109</sup>Donohue, p.31.

<sup>110</sup>Ibid., p. 29.

<sup>&</sup>lt;sup>108</sup>Alvin Pettus, "Environmental Education and nvironmental Attitudes," <u>The Journal of Environmental</u> <u>ducation</u> Vol. 8 (Fall, 1976), p. 51.
professionals.<sup>111</sup> <sup>112</sup> <sup>113</sup> <sup>114</sup> Dunlap and VanLiere found that relationships of occupational status to environmental concern were positive but at lower levels than the relationship indicated between education and environmental concern.<sup>115</sup>

Morrison presented the idea of "relative deprivation". He explained that well educated people have more favorable residential and work environments and have higher environmental expectations because their immediate economic survival problems have been solved.<sup>116</sup> However, there is a level where formal education and environmental information

<sup>111</sup> Sewell, W. R. D. "Environmental Perceptions and Attitudes of Engineers and Public Officials." <u>Environment</u> <u>and Behavior</u> Vol. 3 No. 1 (1971), pp. 23-60.

<sup>112</sup>R.G Willhite, D. R. Bowlus and D. Tarbet, "An Approach for Resolution of Attitude Differences over Forest Management," <u>Environment and Behavior</u> Vol. 5 No. 3 (1973), pp. 351-366.

<sup>113</sup>Carol L. Kronus and Johannes C. VanEs, "The Practice of Environmental Quality Behavior," <u>The Journal of</u> <u>Environmental Education</u> Vol. 8 No. 1 (Fall, 1976), p. 22.

<sup>114</sup>J. Kreger, "Ecology and Black Student Opinion" <u>The</u> <u>Journal of Environmental Education</u> Vol. 4 No. 3 (1973), pp. 30-34.

<sup>115</sup>Riley Dunlap and Kent D. Van Liere, "The New Environmental Paradigm," <u>Journal of Environmental Education</u>, /ol. 9 No. 4 (Summer, 1978), pp. 10-20.

<sup>116</sup>D. E. Morrison, K. E. Hornback and W. K. Warner, " The Environmental Movement: Some Preliminary Observations and Predictions," in <u>Social Behavior, Natural Resources and</u> <u>he Environment</u>, ed. by W. R. Burch (New York: Harper and ow, 1972), pp. 259-279. apparently stops causing people to be favorable to restrictive measures for improving environmental quality.

# PEST CONTROL PRACTICES

Relatively little research on actual pest control activities by gardeners has been done. Pesticide use is a cause for growing concern amongst residents of urban areas. The components of that concern include users' abilities to understand the nature, purpose, and use of pesticides. This survey questions community gardeners on their feelings about pest control methods and compares that with their education level and their feelings about reasons for community gardening. The problem is complex because there are many critical variables, they are heterogeneous and have a demanding interrelatedness.

Many programs have been initiated to educate gardeners on environmentally friendly methods of pest control, such as IPM. Project Pest was one program which attempted to improve understanding of IPM methods amongst suburban homeowners in Meridian Township, Michigan. Initiated in 1979, the program was divided into three sections, a needs assessment, community education, and a program evaluation component. At the onset, they defined "pest" as any disease, insect, animal or weed that caused problems in the homeowners' yard. The needs assessment focused on the types of pests experienced, how those problems were solved, the extent of

reliance on pesticides, and attitudes toward alternatives to pesticides. Information was collected from a sample of homeowners with self administered questionnaires. The findings indicated that most respondents were reacting to existing pest problems, not preventing them. Four out of five respondents used chemicals in their yards during 1979. Half of the chemical users used four or more types of pesticide. Only twenty five percent of the respondents used alternatives to chemicals in 1979.<sup>117</sup>

In Germany, Harris acquired detailed information on ways in which domestic gardeners and allotment holders use fertilizers and plant protection chemicals, their knowledge of chemical use, and their concern for the environment.<sup>118</sup> He distributed survey questionnaires to gardeners as well as analyzed soil samples from their garden plots. Harris found that 76% used chemical plant protection. 34% of these used poisonous chemicals, 26% used harmful chemicals, and 42% used chemicals that were a threat to bees, a traditional guide for environmentally friendly pesticides. However, he found that a majority used organic manures, a method usually attributed to "environmentally friendly" gardeners. Based on his findings, Harris concluded that private gardeners and allotment owners attached importance to environmental

<sup>&</sup>lt;sup>117</sup>Fear, p. 145.

<sup>&</sup>lt;sup>118</sup>J. Haris, "Use of Chemicals in Allotments and Private Gardens," <u>Berichte Uber Landwirtschaft</u> Vol. 66 No. 1 (1988), pp. 125-151.

protection but were oblivious to any pollution to the environment they themselves might be causing.<sup>119</sup>

The new field of urban horticulture has trained scientists interested in urban pest issues. But, much of the information available to community gardeners comes from commercial agriculture. Many of these solutions are inappropriate in urban areas and in small gardening situations. While the farmer is forced to look at pest management from an "economics of farming" viewpoint, suburban and urban gardener's decision to use chemical controls, Integrated Pest Management (IPM) or nothing at all is likely related to a multitude of psychological and social values and variables<sup>120</sup>. Crouch implies a relationship between experience in gardening and pesticide use.<sup>121</sup>

A number of pest control methods have been identified for small farm operations. Many of these are translated in some form to gardening in small plots. Mixed cropping is largely applied to gardening. Crops are intermingled or planted in small blocks. Cultivation is limited to hand tools. Weed control can be accomplished by hand or hoe, and by chemical means such as herbicides. Soil additives such as mulch can reduce weeds as can ground covers of plastic or paper.

<sup>119</sup><u>Ibid.</u>, p. 151.
<sup>120</sup>Fear, p. 127.
<sup>121</sup>Crouch, p. 172.

Insect, disease and fungus control are most often controlled with chemical applications. The two most common methods for chemical application in a garden plot are spraying and dusting.<sup>122</sup> There are a variety of products available in lawn and garden stores and department stores. A selection of these, both environmentally friendly and notso-friendly, were listed in the questionnaire sent to community gardeners. The prices vary, but most cost under twenty dollars for amounts needed in one or two community garden plots.

Another pest control method is to hand pick insects from plants. This method is favored by proponents of organic pest control methods. It can take more time and requires some ability to identify the insects responsible for the damage. Home made remedies are also commonly used by community gardeners. Solutions of garlic, hot pepper, and cigarette tobacco, among others, are used to prevent damage from mold, fungus, and a variety of insect and animal pests. Companion planting of complementary crops is also used to prevent pest damage.

Farmers primarily concerned with total yield may consider pest control an expected condition of farming. Fear suggests that urban dwellers might view pest management as a "necessary evil", pest problems as an annoyance to be

<sup>&</sup>lt;sup>122</sup>J. T. Brands, et. al., <u>Equipment for Vegetable</u> <u>Production</u> (Wageningen, Netherlands: Institute of Agricultural Engineering, 1982), p. 103.

handled quickly and painlessly.<sup>123</sup> Community gardeners face a variety of challenges in deciding to adopt various pest control methods. Many community garden programs are addressed to low to middle income urban families who have few resources. They may receive free seeds and seedlings, but they have no control over variety or quality. Many gardens are established on plots that haven't been cultivated recently and perennial weeds reproduce. In many garden projects, restrictions are placed on using pesticides and herbicides.<sup>124</sup> However, the nature of shared space prevents them from completely protecting their crops from blowing dusts and sprays used in other plots.

The public has been made increasingly familiar with the side effects of pesticides. Sound land management plus good gardening techniques do much to aid the environment. Evidence of the results of such thinking was described by Crouch in a recent case in England.<sup>125</sup> The Nature onservancy figured in a campaign to save an allotment from evelopment when they discovered a plant species there which d been thought extinct. A combination of persistent tivation and organic methods of gardening without bicides, had provided its sanctuary.

<sup>&</sup>lt;sup>123</sup>Fear, p. 127.

<sup>&</sup>lt;sup>124</sup>Drake, p. 31.

<sup>&</sup>lt;sup>125</sup>Crouch, p. 145.

But, pesticides also contribute much to agricultural output, increasing and guaranteeing successful production. Perhaps the issue is more complicated. Although the use of these agents may still be justified, the circumstances which would provide such justification would clearly have to be compelling. It is urgent that we vastly improve our understanding of the impact of such actions upon the long term productivity of our resource. <sup>126</sup>

<sup>126</sup>Nathan Rosenburg, Technology and American Economic owth (New York: Harper and Row Publishers, 1972), pp. 196-/.

## CHAPTER 3: THE RESEARCH METHOD

# A DESCRIPTION OF THE SURVEY

The hypotheses proposed were examined using the information provided by a self-administered survey to a stratified random sample of community gardeners who participated in the Lansing, Michigan Self-Help Garden Project community gardening program during the 1991 gardening season. Community gardeners were asked to respond to questions about their opinions and practices in their community gardening plot, regardless of whether they also garden at home.

The survey instrument was designed using methods from Babbie and conducted using Dilman's Total Design Method.<sup>127</sup> All responses to the self-administered mailed survey are, of course, the respondents' perceptions of attitude and practice. No attempts were made to assess the truthfulness of responses.

The questionnaire was divided into sections which reflect the three variables of the study; education, reason for gardening, and feelings about pest control. There are 11 to 12 questions in each section. The first part of each section used six or seven close-ended questions with ordered answer choices about the variable. It was designed to determine the respondent's attitudes. The remaining four or

<sup>&</sup>lt;sup>127</sup>Don A. Dillman, <u>Mail and Telephone Surveys The Total</u> <u>Design Method</u> (New York: John Wiley and Sons, 1978).

five questions in each section were close ended questions formatted in a mixture of multiple choice, rank ordering, and yes or no responses. They were designed to seek more quantitative information from the respondent. Some questions were included in each section as internal checks on the validity of questions and responses.

The form itself was a blue, tri-folded 8 1/2 inch paper printed on both sides (Appendix 1). The print was black, block letters and copies were made on a high quality copy machine. The form included a stamped return address.

The questionnaire was reviewed by a panel of experts including university personnel involved in social survey projects, garden project personnel, community gardeners, the members of my thesis committee, and community developers. A pre-test of community gardeners was conducted using gardeners who attended an annual conference of the American Community Gardening Association in Cleveland, Ohio in September, 1991. The purpose was to determine the suitability and clarity of questions and format to community gardeners and to seek input as to the survey's appropriateness and applicability to programs across the country. These responses were not included in the final survey sample.

The questionnaire was mailed on November 12,1991 with approval from UCHRIS, the human subjects committee at Michigan State University. The mailing included a brief

cover letter from the Self Help Garden Project director and this researcher explaining the purpose and use of the survey (Appendix 2). Reminder post cards were sent November 26, 1991, two weeks after the original mailing (Appendix 3). Then, another copy of the questionnaire and a different cover letter encouraging response was mailed on December 6, 1991 (Appendix 4). This was followed once more by a reminder postcard on December 14, 1991.

## THE SELECTION OF QUESTIONNAIRE RECIPIENTS

The Garden Project office supplied a copy of a DBASE III file with the names and mailing addresses of all the gardeners registered in the program. The list was compiled for the purpose of sending newsletters. It did not include a complete list of Hmong refugee families. Approximately 90 Hmong and Laotian families participated in the program through representatives and did not receive the newsletter in 1991. Human service agency representatives, property donators, and volunteers also received newsletters but were not included in this survey. The program offers roto-tilling to those who have a backyard for gardening. These participants also received newsletters, but were not included in this survey. All of the names and addresses of those who are not listed as "community gardeners" were removed from the file. Also, duplicate names and addresses were removed. The result was a list of 311 community

gardeners who participated in the program during the 1991 garden season. It is important to note that the population from which random selections of survey participants were taken did not include the total number of people served by the Self Help Garden Project.

The 311 community gardeners recorded in the mailing list were the study group. In order to achieve confidence limits of 90% confidence with a 5% sampling error, it was necessary to survey 145 of these gardeners, 47% of the program's community garden participants.

Gardeners were registered by their location in one of seventeen gardens throughout the city. In order to accommodate the differences between gardens, a stratified random sampling method was used to identify the sample population. This method capitalized on the known homogeneity of the sub-populations, the gardens, so that only relatively small samples were required to estimate the characteristic for each sub-population.

The following formula was used for this calculation;

Y= n(G1/N) where:

Y= number gardeners needed from the garden as a representative percentage in the sample.

n= sample size of 145; to achieve 90% confidence <u>+</u> 5% sampling error

G1...17= the number of gardeners per project garden; N= total gardeners in program<sup>128</sup>

After determining the number of samples needed from each garden to serve as a proportional stratified sample, gardener names were randomly selected, without replacement, for each garden. Thus, gardeners from each of the gardens was identified as the representative sample from their garden (Table 3).

<sup>&</sup>lt;sup>128</sup>Gouri K. Bhattacharyya and Richard A. Johnson, <u>Statistical Concepts and Methods</u>, (New York: John Wiley and Sons, 1977), pp. 563-573.

GARDEN NAME	NUMBER OF GARDENERS	% OF TOTAL PROGRAM PARTICIPANTS	NUMBER OF Questionnaire Recipients
Airport	24	7.72	11
Dwight Rich	4	1.29	2
Foster Street	14	4.50	7
Henry North	27	8.68	13
Lenawee	9	2.89	4
Lilac Street	11	3.54	5
Mt. Hope	3	0.97	1
Oak Park	73	23.47	34
Otto School	7	2.25	3
Our Saviour	17	5.46	8
PineTree	16	5.14	8
PleasantGrove	4	1.29	2
Risdale	17	5.47	8
St. Michaels	18	5.78	8
Towar Gardens	36	11.58	17
University	31	9.97	15
TOTALS: 17	311	100%	146=47%

Table 3. Stratified Random Selection of Survey Recipients

A total of 156 community gardeners were sent questionnaires. Of these, ten questionnaires were returned uncompleted. The returned forms included nine incorrect addresses and one with no answers. Thus, 147 surveys were successfully sent. Respondents returned 77 completed surveys. The overall return rate was 52.4%. This provided a statistically sufficient basis for analysis.

The survey responses were tabulated and data arranged using the statistical package, SPSS-PC+.<sup>129</sup> Analyses, including frequencies and cross tabulations, were conducted to assess relationships between the outlined variables. Relationships between responses in each variable category were examined. Responses to classifying questions were also examined to shed more light upon possible relationships between the variables.

# A DESCRIPTION OF THE QUESTIONNAIRE CONTENTS

# QUESTIONNAIRE SECTION I. EDUCATIONAL LEVEL

The questions about the respondents' attitudes and educational experiences were placed at the beginning of the survey because they were non-threatening, direct and easy to answer.

Question 1 (Q-1) gathers information about gardeners feelings about different forms of gardening education. As in

<sup>&</sup>lt;sup>129</sup>Marija J. Norusis, "The SPSS Guide to Data Analysis for SPSS/PC+," (Chicago, IL.: SPSS inc., 2nd edition, 1991).

Bloom's Taxonomy of Learning<sup>130</sup>, these non-formal education techniques address a range of learning experiences. The learning process moves from an initial orientation of knowledge and comprehension, through a "middle" level of application and analysis to an ultimate level of synthesis and evaluation. Using these levels of learning, the responses can be evaluated from high to low in terms of agreement or disagreement with the statements. The following is a breakdown of the orientation of each statement in the first section of the questionnaire (Table 4).

Table 4. Assessments of Education	n Levels
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SCALE OF Education level	COMPARABLE LEVEL IN BLOOM'S TAXONOMY OF LEARNING	QUESTIONNAIRE STATEMENTS INDICATING THE EDUCATION LEVEL
LOW	Knowledge, Comprehension <u>descriptors</u> : repeat, imitate, observe, restate	Agreement to statements 1, 5
MIDDLE	Application <u>descriptor</u> :practice, apply, compare, employ	Agreement to statements 3,4
HIGH	Synthesis, Evaluation <u>descriptors</u> : plan, create, formulate, evaluate	Agreement to statements 6, 2

This concept was used to scale responses in this survey. Respondents who agreed that their learning of garden technique was at a repetition and recall level fell into the initial level of learning on the education scale. Those who described their level of learning in terms of practical applications of learned techniques fell into the middle category. Gardeners who felt that they were self motivated, read gardening literature and used a variety of learning tools to synthesize the information into planning and evaluating their garden plot were in the ultimate category of education level.

The second question in section I, Q-2, directly asked gardeners to select the level of learning about gardening that best described them; beginner, average, almost expert, or expert. The next question, Q-3, attempted to quantify experience by recording the years of gardening experience.

In question Q-4, the respondent indicated how many years of formal education they completed. Assumptions have been made that those with a higher level of formal education are generally more knowledgeable, even about topics commonly taught in non-formal settings. Gardening and pest control practices for urban gardens are commonly taught in nonformal settings. The assumption could be tested by education level with responses to questions about pest control methods.

Question Q-5 determined whether the respondent had invested in gardening information. Ownership of such materials might provide quantitative evidence for qualitative assessments of education levels. Differences between the respondents' feelings about learning, their level of formal education, and their ownership of educational materials, could indicate a gap between attitude and practice in the garden. Question Q-6 asked about the respondents' experience in farming and in gardening classes. It served as a quantitative measure of experiential educational. Working on a farm could, at very least, expose the gardener to cropping and pest control methods. The respondents' experiential learning experience increased a level, to a professional status, if the respondent was paid for that experience. Taking courses in gardening could indicate that the respondent was at an initial level of participation in gardening education. Teaching a gardening class requires synthesis and evaluation of gardening, and indicated a higher level of learning.

# QUESTIONNAIRE SECTION II. REASON FOR COMMUNITY GARDENING

In this study, the gardener's reasons for participating in a community garden were distinguished according to a hierarchy of needs. The scale of reasons for community gardening ranged from a "self-betterment" approach, then to

fulfilling "economic needs" and finally to a "socialization needs" level of making friends and community improvement.

As in Section I, the first question Q-1 consisted of seven statements with a Likert scale response. The responses to statements indicated agreement or disagreement with various reasons for participation in a community garden.

In the second question, Q-2, respondents ranked the importance of reasons for participation in a community garden. This question could provide information on the importance of reasons for community gardening to the respondent. It separated simple agreement to ideas in Q-1 and the respondents personal reasons for community gardening. Community gardens require participants to share resources. By asking respondents perceptions of other gardeners' reasons for participation, answers to question three (Q-3) illustrated perceptions community gardeners have of each other.

The last two questions, Q-3 and Q-4, provided information on participation by specifically identifying the number of times a gardener visited the garden plot and the amount of time they spent there on each visit. Differences between the reasons for participation, the level of participation, and the actual time spent in the garden could highlight a relationship between respondents' theories about community gardening and their actual participation. A more extensive study of this aspect could provide program

planners with useful information for planning community garden activities, communication between gardeners and theft prevention.

# QUESTIONNAIRE SECTION III. PEST CONTROL

As in previous sections, the third part of the survey included Likert Scale statements about feelings toward pest control methods and pesticide use (Q-1). Each respondent could be classified by their responses using the following chart (Table 5).

Table 5. Level of Feelings About Pest Control Methods

LEVEL OF FEELINGS	DESCRIPTION OF FEELINGS	QUESTIONNAIRE STATEMENTS INDICATING FEELINGS
Pesticide Friendly	Little or no fear or dislike of pesticides. Sees them as good, necessary, and safe.	Agreement to statements 1,3,6
Pesticide Unfriendly	Fear of pesticides. Perceives them as dangerous and is afraid to use them.	Agreement to statements 2,5

The second question (Q-2) asked gardeners to describe their approach to pest control. There was an opportunity for respondents to describe the pest problem observed in their garden(Q-3). In question five, Q-5, the respondent estimates how much they spent on pest control. This information could be used to describe the respondent as a high or low pest control user based on economic investment. If the respondent felt that pest problems were low during the garden season (Q-3), yet spent a lot of money on pest control (Q-5), he/she could be described as a Pesticide Friendly pest controller. A high pest problem reported in garden plots could affect judgements on the level of expenditures on pest control. The level of spending could be more accurately described in response to perceived pest problems.

The fourth question, Q-4, listed a variety of products for sale in lawn and garden retail centers in the greater Lansing area. By marking the kind of pesticides they had used in the garden, the gardeners illustrated whether their practices are pesticide friendly or pesticide unfriendly. The actual amounts applied were not requested because the required amount varied so widely in accordance with crop size, pest problem and weather conditions. Issues and factors that could affect a person's ability to spend money on pesticides was not discussed in this study. Obviously, social and economic factors existed, but they not assessed in this survey.

The possible variation between the gardeners' perception of their pesticide use (Q-2) and their actual use (Q-4,Q-5) could produce some meaningful results. For example, in a similar study, German researchers found that

private gardeners and allotment owners attached importance to environmental protection but were oblivious to any pollution to the environment they themselves might be causing.<sup>131</sup>

# LIMITATIONS OF THIS STUDY

This is a study of people's perceptions, their feelings or opinions and what they say they practice. Their actual practices in the community garden were not verified in this study.

The survey population is limited by response rates and by the quality of the mailing list. There were a substantial number of Hmong immigrant families not included. There were nine forms returned because of an incorrect or undeliverable mailing address.

The timing of the survey was not ideal. The gardening season for the project ends in October. The questionnaire was sent after the end of the season and just before the holidays. With so many other things on their minds, gardeners may not have been able to reliably remember the conditions in the garden. They may have forgotten the types of pest control products used during the past season. Their feelings about pest control at the end of the season could have also been affected by the results of their crop, theft problems, or final newsletters.

<sup>&</sup>lt;sup>131</sup>Harris, p. 151.

As with any self administered survey, the intent of some questions may have been misinterpreted by the respondents. If specific questions were misinterpreted, the answer given may not have accurately reflected the information sought.

Every effort was made to assure respondents that this survey was conducted by a researcher outside of the administration of the program. The survey respondents maintained anonominity. As such, individual responses would not affect the respondents role in the community gardening program. However, it is possible that some respondents answered the questionnaire so as not to endanger their possibility of receiving program support in the future.

The questionnaire dealt with pesticides and pesticide use. The "Halo Effect" surrounds environmental topics and despite demonstrated validity, the survey may have conveyed to the respondents that the researcher was trying to measure issues that are important causes for concern.<sup>132</sup> Respondents may have perceived a negative connotation to pesticide use and responded accordingly, despite their true feelings on the subject.

<sup>&</sup>lt;sup>132</sup>Born, p. 41.

## CHAPTER 4

# RESULTS OF THE SURVEY

This chapter is divided into two sections. In the first, the general results of the survey are portrayed in terms of the frequency of responses to the questionnaire. The results are presented according to the three variables of this study; education level, reason for community gardening, and feelings about pest control methods. Section two follows with an analysis of responses to the variable components as ordered by the hypotheses of this study.

# SECTION I: RESPONSE TO VARIABLES

# VARIABLE: EDUCATION LEVEL

An assessment of the respondents' formal education level revealed that 21% had completed a high school or technical school education. Almost one half (44.6%) of the respondents had completed a college education or more. In fact, the majority (88%) had a high school education or above (Table 6).

YEARS OF SCHOOL COMPLETED	% of Respondents	SUBTOTALS	SUBTOTALS	CUMULATIVE TOTALS
Elementary School				11.8%
1-8 years	11.8%	11.8%		
High School				36.8%
2 years	6.68			
3 years	1.3%			
4 years	17.1%	25.0%		
Technical School			completed high	40.7%
1 year	1.3%		school or	
2 years	1.3%		80.1%	
3 years	1.3%	3.9%		
College			attended technical	67.0%
1 year	5.38		school or	
2 years	5.3%		30.2%	
3 years	3.98			
4 years	11.8%	26.3%		
Post College			completed	99.88
1 year	7.98		or above	
2 years	9.28		44.08	
3 years	3.98			
4 years	9.2%			
5 years	2.6%	32.8%		

# Table 6. Education Level Completed by Respondents

#### GARDENING EXPERIENCE

More than one half of the respondents (52%) had over six years experience in gardening (Figure 1). In contrast, a quarter (25.3%) of the respondents had less than two years experience. The remainder had experience between these extremes. A few had been gardening for two to six years (17%) or for four to six years (5.3%).

Respondents also described their level of expertise in gardening. A very small percentage felt they were expert gardeners (4%). A majority felt they had an almost expert (29.3%) to average (48%) knowledge of gardening. The remainder categorized themselves as beginners (18.7%).



Figure 1. Respondents' Gardening Experience

# **RESPONDENTS' AGRICULTURAL EXPERIENCE**

Agricultural experience may influence a gardener's attitudes toward participation and practice in a community garden. Respondents were asked to indicate if they had ever worked on a farm and whether that experience was professional (paid). Results indicated that 63.6% of the respondents had worked on a farm. However, only 35.1% had been paid for farm work.

# GARDENING CLASS EXPERIENCE

A small portion (19.5%) of respondents had taken a gardening class. Even fewer demonstrated a higher level of garden learning by teaching a class on gardening (6.5%). The answers to questions in this section were not mutually exclusive. It is possible, and even probable, that the 6.5% of respondents who had taught a gardening class were also members of the group (19.5%) who had taken gardening classes.

## FEELINGS ABOUT METHODS FOR LEARNING GARDENING

In order to assess respondents feelings toward how they learn gardening information best, they were asked to agree or disagree with a list of statements about the utility of various informational sources (Figure 2).



Figure 2. How Respondents Learn About Gardening

This data suggests that the majority of respondents found that they learn best from watching (77.9%). The next most popular method was learning from friends (58.5%). It must be noted however, that there was a large (35.1%) disagreement with that statement. Perhaps learning from friends or relatives is a more accessible method for participants in this program.

Reading newspapers and magazines was found to be the best way to learn to plan a garden for 53.3% of the respondents. But, here again, a sizable number of respondents (39%) disagreed. Reading books to learn gardening was a popular learning method with half of the

respondents (51.3%). Another third (32.9%) disagreed with this statement as well.

Few respondents indicated that workshops were the most useful source for learning to identify garden pests (29.9%). As mentioned earlier, few respondents had experience learning about pests from workshops. However, response to this statement also indicates that workshops are not viewed as the most effective method for learning about garden pests. In fact, 59.8% of the respondents specifically disagreed that they learned to identify pests in a workshop.

# OWNERSHIP OF INFORMATIONAL RESOURCES

Respondents indicated the types of gardening information resources which owned (Figure 3). Results indicated the sources of information, other than person to person communication, which respondents actually kept on hand for use. The choices offered were not exclusive. Thus, respondents could indicate ownership of more than one type of informational resource.



Figure 3. Gardening Information Owned by Respondents

#### VARIABLE : REASONS FOR PARTICIPATING IN A COMMUNITY GARDEN

An analysis of the frequencies of responses to the questions in the survey generally illustrated reasons for participating in the community gardening program (Table 7). Respondents were asked to agree or disagree to reasons for gardening in seven statements.

REASON FOR COMMUNITY GARDENING	% agree	% undecided	% disagree
TO SAVE MONEY	89.6	2.6	7.8
FOR RELAXATION	81.8	5.2	13.0
TO MAKE NEW FRIENDS	74.0	7.8	18.2
FOR FUN, NOT WORK	71.5	3.9	24.7
FOR EXERCISE	55.9	9.1	35.1
TO IMPROVE THE NEIGHBORHOOD	50.7	13.0	36.4
TO HAVE ENOUGH TO EAT	19.7	5.3	75.0

Table 7. Respondents Reasons for Community Gardening

The importance of reasons respondents participate in a community garden were assessed by the percentage of gardeners who agreed to the statements about reasons for participating in a community gardening program. The response choices were not mutually exclusive. Thus, each respondent could agree with more that one reason for participating in a community garden.

Most respondents agreed that saving money was an important reason for participating in a community gardening program (Figure 4). The next strongest reasons for participation were for relaxation, to make new friends and for fun. Over half of the respondents felt that the best thing about gardening is the exercise. One half of the respondents expressed agreement with the statement "I garden

in a community plot to improve my neighborhood". A small percentage agreed that without their garden, they would not have enough to eat. A large portion of the respondents disagreed that they community gardened in order to have enough to eat.



Figure 4. Respondents' Reasons for Community Gardening

Respondents also ranked a list of reasons for participating in a community garden in order of importance to themselves (Table 8). The results were not decisive. Many respondents simply marked important reasons without designating a rank order of importance. Some respondents also ranked more than one choice at the same level.

REASONS FOR Participating	MOST TO LEAST IMPORTANCE 1ST TO 6TH (% OF RESPONDENTS)				MARKED BUT NOT RANKED		
	RANK 18T	2ND	3RD	4TH	5TH	6TH	
EXERCISE	7	26	10	2	8	7	20
RELAXATION	32	17	20	5	5	3	3
MEET PEOPLE/MAKE FRIENDS	3	3	20	15	31	10	17
IMPROVE NEIGHBORHOOD	0	9	15	4	16	44	13
SAVE MONEY	14	19	11	13	14	9	20
GROW NEEDED FOOD	25	9	6	19	9	11	215

Table 8. Respondents Rank Reasons for Community Gardening

This data suggests that the majority of gardeners rank relaxation or to grow needed food first. Exercise was most often ranked second. Meeting people/making friends was ranked third. Most gave fourth ranking to exercise, growing needed food and meeting people. Gardening to meet people and make friends was ranked most often in the fifth position and improving the neighborhood was least important to the majority.

#### PERCEPTIONS ABOUT FELLOW COMMUNITY GARDENERS

Community gardening requires that participants share resources, including air, water and space, with others. The perceptions a gardener has about other community gardeners is influenced by his or her perceptions of reasons for community gardening. The questionnaire provided a list of reasons for gardening. Respondents chose the reason they felt was most important to others who community garden (Figure 5). As such, responses were mutually exclusive.



Figure 5. Respondents' Reasons Why Others Community Garden

Many respondents felt that others participated in the community garden to grow needed food (42.9%). This was in contrast to the small number of respondents who felt that they themselves garden to grow needed food (19.7%) as discussed in the preceding section (Table 6). The next most common reasons for others' participation were to save money (20.8%) and for relaxation (14.3%). These echoed the respondents personal reasons for community gardening (Figure 4).

Very few respondents felt that others community garden to meet people and make friends (7.8%). Few felt that others participate to improve the community (5.2%). Half of the respondents (50.7%) had agreed that they community garden to improve their community but apparently did not perceive others as doing the same. Only 3.9% of the respondents felt that others participate for the exercise. Respondents gave this reason much more importance when they ranked their own reasons for community gardening (Table 9).

Table 9. Personal Reasons for Community Gardening Compared to Perceptions of Fellow Gardeners' Reasons

REASONS FOR GARDENING	FOR SELF (% Agreed)	FOR OTHERS (% Agreed)
TO HAVE ENOUGH TO EAT	19.7	42.9
TO SAVE MONEY	89.6	20.8
FOR RELAXATION	81.8	14.3
TO MEET PEOPLE/ MAKE FRIENDS	74.0	7.8
TO IMPROVE THE COMMUNITY	50.7	5.2
FOR EXERCISE	55.9	3.9

# TIME SPENT IN THE COMMUNITY GARDEN PLOT

Almost one half of all respondents (46.8%) visited their garden plot one to three times a week (Figure 6). Another large group (42.9%) visited their plot three or more times a week. A small number (5.2%) visited their plot three or less times a month.

When they visited their plot, most (46.8%) respondents spent one to two hours there (Figure 7). Slightly more than a quarter of respondents (28.6%) spent a half hour to one hour in their plot and 19.5% of the respondents spent two or more hours in their garden plot each visit. Some (5.2%) did not respond to this question.

TIME SPENT IN COMMUNITY GARDEN



Figure 6. Time Respondents Spent in the Community Garden



Figure 7. Respondents' Visits to Their Community Garden Plot
# VARIABLE: PERCEPTIONS ABOUT PEST CONTROL DESCRIPTIONS OF RESPONDENTS

# GARDEN COORDINATORS

Of the respondents to the questionnaire, 19.5% indicated that they were garden coordinators. The garden coordinators are program participants who volunteer to serve as a representative of their community garden and as a liaison with the project administrative staff. Their demonstrated participation in the garden is greater than most others. They attend monthly meetings with project staff to provide information on issues of concern to gardeners. They contribute to project wide decision making and help organize and execute garden activities. These include plot marking and assignment, coordinating education and social activities, troubleshooting, and end of season clean-up of the garden plots. There are from one to five coordinators per a garden, about 25 in total.

# ORGANIC GARDENERS

One of the community garden plots, the University Lutheran Garden, is an "all organic" garden. Some other gardens have areas designated for organic growers. Participants are not permitted to use inorganic pesticides in those areas. To discern which respondents had plots in these areas, they were asked to indicate whether pesticide

use was permitted in their plot. The majority (87.3%) were free to choose organic or non-organic methods of pest control. The remaining chose to participate in organic gardens.

# LEVEL OF PEST PROBLEMS

Gardeners were asked to evaluate the level of problems with insects and weeds during the gardening season. Most gardeners felt that pest problems were average to low during the 1991 gardening season (Table 10).

LEVEL OF PROBLEM	RESPONSES
HIGH	16.9%
AVERAGE	46.8%
LOW	29.9%
DON'T KNOW/UNDECIDED	6.5%

Table 10. Pest Problems in Respondents' Community Garden Plots, 1991

# MONEY SPENT ON PEST CONTROL

Pest control in the garden falls into two general categories, insect control and weed control. Organic and non-organic products are readily available in area stores and the types and prices of such products were assessed during the garden season. Both weed and insect control products are available for similar prices. Single containers of all products, both organic and inorganic are available for between \$1 and \$10. Respondents were asked to separate the amount they spent on pest control into the money spent on insect control and the money spent on weed control (Figure 8).



Figure 8. Respondents' Expenditures on Pest Control, 1991

#### WEED CONTROL

The majority of respondents (78.3%) spent no money on weed control in their garden (Figure 8). A few (11.6%) spent from one to ten dollars, 4.3% spent between ten and twenty dollars, and 5.8% spent more than twenty dollars on weed control in their garden plot last year.

# INSECT CONTROL

The majority (55.4%) spent between one and ten dollars on insect control in their plot last year (Figure 8). Nearly a third (28.4%) of the respondents spent no money on insect control, 12.2% spent between ten and twenty dollars, and only 4.1% spent more than twenty dollars on insect control.

In summary, most respondents spent ten or less dollars on insect control and no money on weed control in their garden plot last year.

#### PEST CONTROL METHODS USED BY RESPONDENTS

The questionnaire provided a list of commonly available pest control methods, both non-organic and organic. Respondents were asked to mark those which they have used in the past two gardening seasons.

#### NON ORGANIC METHODS USED

The most commonly used non organic pest control methods used by respondents were Sevin (32.5%) and Tomato-Vegetable Dust (32.5%) (Figure 9). A few respondents indicated using Green Weed Preventer (6.5%) and Round-Up (5.2%). Almost no respondents used Malathion (3.9%) or Weed-B-Gone (3.9%) in their community garden plot during the 1990 and 1991 season.



Figure 9. Non-Organic Pest Control Products Respondents Used in Community Gardens

#### ORGANIC METHODS USED

The most popular organic pest control methods used by respondents was homemade remedies (23.4%) (Figure 10). Some respondents wrote in recipes for these remedies. They included hot pepper, garlic, and dish soap. Mulch (26%) was also commonly used for pest control. It is particularly effective for weed control.

A notable number of respondents used insecticidal soap (11.7%) for insect and fungal infections. A few used diazinon (9.1%), a brand name for a product with Bacillus thuringensis for killing insects. Even fewer respondents indicated using Bacillus thuringensis directly (7.8%).

Very few participants used Rotenone (2.6%) in their community plot. None of the respondents indicated using Diatamaceous earth or Dipel, organic products available in the Lansing area.



Figure 10. Organic Pest Control Products Respondents Used in Community Gardens

A few respondents described other pest control methods used in their community garden plots (9.1%). These included specific recipes for homemade pest control remedies, physical and noise barriers such as whirly-gigs and scarecrows, and hand-picking of insects. None of the respondents described non-organic pest controls under the "other" section of the guestionnaire.

#### FEELINGS TOWARDS PEST CONTROL METHODS

A majority of respondents agreed with the statement that pesticides are dangerous chemicals (76.7%) (Figure 11). Respondents were divided on whether they understand and use pesticides in their garden (52%) and on whether pesticides are necessary for a productive garden (44.2%).

Few respondents agreed that pesticides are safe (16.9%). But, only 32.9% agreed that they were afraid to use pesticides. It was interesting to note that despite a large agreement that pesticides are dangerous, half of the respondents indicated that they were not afraid to use them and over half use pesticides in their community garden plot.



Figure 11. Respondents' Feelings About Pesticides

# SECTION 2: LEVEL OF FORMAL EDUCATION COMPARED TO FEELINGS ABOUT PEST CONTROL METHODS

Respondents provided their formal years of education in the first section of the questionnaire. In the last section, they described their feelings toward pest control methods. The responses to these two variables are compared here using the SPSS-PC+ cross tabulation calculation function. Results determine whether there is an apparent relationship between respondents formal level of education and their feelings toward pest control methods.

# FORMAL EDUCATION LEVEL AND FEELINGS ABOUT INSECTS

Cross tabulations indicated a significant relationship (Pearson R = - 0.3292, significance .0018) between respondents level of formal education and their response to the statement "there is no such thing as a good insect" (Figure 12). Respondents who had completed elementary school were divided on whether there was such a thing as a good insect (3.95% agreed, 3.95% disagreed).



Figure 12. There is No Good Insect by Education Level

Those who had completed high school, college and technical school were increasingly more certain that there was such a thing as a good insect. Respondents who had received post-graduate education were overwhelming convinced that there are good insects. In conclusion, community gardeners with a higher level of education were more likely to feel that there are good insects.

# PESTICIDE FRIENDLY FEELINGS TOWARDS PEST CONTROL

<u>Hypothesis 1</u>= Community gardeners with a high level of education feel unfriendly towards pesticide use in the community garden.

<u>Null Hypothesis 1</u>= Community gardeners' education level is not related to their feelings about pest control in the community garden.

The responses to three statements about pest control examined here indicate a pesticide-friendly feelings about pest control methods. Respondents indicated little or no fear or dislike of pesticides. They agreed that they used pesticides in their community garden plot. They see them as necessary for a productive garden. They also agreed that pesticides were safe. These responses were compared to the level of formal education that those respondents had completed.

Results for each education level reflect a percentage of the total number of respondents from that education level. A total of 76 respondents completed these portions of the questionnaire. There were 9 respondents with elementary school education level, 19 with a high school level, 3 with a technical school education level, 20 with college level education and 25 with a post graduate level of education.

An assessment of respondents education level compared to their response to the statement "I understand and use pesticides" is shown below (Table 11). Respondents with a lower, elementary school level education were more likely to agree (66.8%) that they understand and use pesticides in their community garden plot. Those who had a high school education were evenly split over whether or not they used pesticides in their garden plot (47.4%). Most respondents who had attended technical school disagreed with pesticide use in their garden (66.7%).

FORMAL EDUCATION LEVEL	I UNDERST	AND AND USE	PESTICIDES
	AGREE	UNDECIDED	DISAGREE
ELEMENTARY SCHOOL	66.88	11.0%	22.28
HIGH SCHOOL	47.48	5.2%	47.4%
TECHNICAL SCHOOL	33.38	0	66.7%
COLLEGE	50.0%	10.0%	40.0%
POST GRADUATE	56.0%	0	44.0%

Table 11. Education Level and Pesticide Use

In contrast, the majority of respondents with a college education (50.0%) as well as a majority of post graduates (56.0%) used pesticides in their community garden. However, at both college and post-graduate levels of education, more than a third of the respondents were also likely to disagree with pesticide use in their plots (college 40.0%, post graduate 44.0%). As such, there was no significant relation between respondents level of education and whether they used pesticides in their community garden plot (Figure 13).



Figure 13. Understand and Use Pesticides by Education Level

Table 12 illustrates a comparison between response to the statement "Pesticides are necessary for a productive garden" and the respondents' education level. Over half of respondents with an elementary school level education felt that pesticides are necessary for a productive garden (55.6%). Similarly, a majority of high school educated respondents also agreed (47.4%). However, only a third (33.3%) of those with technical school level of education agreed that pesticides were necessary. In a similar response, few college level respondents felt that pesticides were necessary (40.0%). Most post graduate level respondents felt that pesticides were unnecessary (44.0%).

Table 12. Education Level and Pesticides Necessary for a Productive Garden

FORMAL EDUCATION LEVEL	PESTICIDES ARE NECESSARY FOR A PRODUCTIVE GARDEN.		
	AGREE	UNDECIDED	DISAGREE
ELEMENTARY SCHOOL	55.6%	33.3%	11.1%
HIGH SCHOOL	47.4%	10.5%	42.1%
TECHNICAL SCHOOL	33.38	0	66.78
COLLEGE	40.0%	10.0%	50.0%
POST GRADUATE	44.0%	0	56.0%

The cross tabulation indicated a significant negative correlation between level of education and agreement that pesticides are necessary for a productive garden (Pearson R=-.27613, significance .0079). Respondents with a higher level of education were less likely to feel that pesticides are necessary for a productive garden (Figure 14).



Figure 14. Pesticides are Necessary for a Productive Garden by Education Level

At all education levels, the majority of respondents disagreed with the statement that pesticides were safe (Table 13). However, the percentage of respondents who disagreed decreased as their education level increased. At the lowest level of formal education, elementary school, 44.4% of the respondents disagreed that pesticides are safe. However, at the highest level of education, post graduate, an even larger number of respondents (88.0%) disagreed that pesticides were safe. This information was not surprising considering the previously reported results indicating that a majority of all respondents (76.7%) agreed that pesticides are dangerous chemicals.

FORMAL EDUCATION LEVEL	PESTICIDES ARE SAFE. IF THEY WERE DANGEROUS, STORES WOULD NOT SELL THEM.				
	AGREE	UNDECIDED	DISAGREE		
ELEMENTARY SCHOOL	11.1%	44.4%	44.48		
HIGH SCHOOL	26.3%	31.6%	42.1%		
TECHNICAL SCHOOL	0	33.3%	66.7%		
COLLEGE	25.0%	20.0%	55.0%		
POST GRADUATE	4.0%	8.0%	88.0%		

Table 13. Formal Education Level and the Safety of Pesticides

It is important to note that this cross tabulation indicated a significant negative correlation (Pearson R = -.30415, significance .0038) between level of formal education and agreement with the statement "pesticides are safe." Respondents with higher levels of formal education are less likely to feel that pesticides are safe (Figure 15).



Figure 15. Pesticides Are Safe by Education Level

For the data in Table 14, responses to three statements were combined: pesticides were used in the community garden plot, pesticides were necessary for a productive garden, and pesticides were safe. The result is a general profile of a pesticide friendly feeling toward pest control in the community garden. The response is then considered in light of the level of formal education those respondents had completed.

Table 14. Education Level and Pesticide Friendly Feelings

FORMAL EDUCATION LEVEL	PESTICIDE FRIENDLY FEELINGS ABOUT PEST CONTROL IN THE COMMUNITY GARDEN.				
	AGREE	UNDECIDED	DISAGREE		
ELEMENTARY SCHOOL	44.5%	29.6%	25.98		
HIGH SCHOOL	40.4%	15.8%	43.8%		
TECHNICAL SCHOOL	22.2%	11.1%	66.7%		
COLLEGE	38.3%	13.3%	48.48		
POST GRADUATE	34.6%	2.7%	62.78		

The majority of respondents with an elementary school education had pesticide friendly feelings about pest control in the community garden (44.5%) (Figure 16). However, when separated by their education level, no other respondent groups demonstrated a pesticide friendly feeling majority. While the correlation was not significant, there was an obvious increase in the percentage of those who disagreed with pesticide friendly feelings as the level of education increased.



by Education Level

### PESTICIDE UNFRIENDLY FEELINGS ABOUT PEST CONTROL

Responses to the next two statements indicated unfriendly feelings toward pesticide use in the community garden. Respondents indicated a fear or dislike of pesticides by agreeing to the statements; pesticides are dangerous chemicals and I am afraid to use pesticides. The level of formal education completed by respondents was compared with their responses to negative statements about pesticide use (Table 15).

Table 15. Education Level and Pesticides are Dangerous Chemicals

FORMAL EDUCATION LEVEL	PESTICIDES ARE DANGEROUS Chemicals				
	AGREE UNDECIDED DISAGR				
ELEMENTARY SCHOOL	66.7%	22.2%	11.1%		
HIGH SCHOOL	78.9%	10.5%	10.53%		
TECHNICAL SCHOOL	100.0%	0	0		
COLLEGE	55.0%	10.0%	35.0%		
POST GRADUATE	96.0%	0	4.0%		

The majority of respondents at all levels of formal education agreed that pesticides are dangerous chemicals (Figure 17). Respondents with elementary school education agreed strongly that pesticides are dangerous chemicals (66.7%). It is interesting to note that almost the same percentage of this group (66.8%) indicated that they use pesticides in their community garden plot (Table 8). Apparently, respondents with elementary school education levels are aware of the potential dangers of pesticides, but use them in the community garden plot anyway. A majority of the same group (55.6%) felt that pesticides are necessary for a productive garden. This may explain why their continued use of a product they feel is dangerous.

A majority of high school level respondents agreed that pesticides are dangerous chemicals (78.9%) as did all of those at the technical school level (100%). While slightly more than half of the college level respondents agreed that pesticides are dangerous (55.0%), a sizeable part of the group disagreed (35.0%). Respondents with a post graduate level education agreed overwhelmingly that pesticides are dangerous chemicals (96.0%). This was in line with their strong disagreement (88.0%) to the statement that pesticides are safe.



Figure 17. Pesticides Are Dangerous Chemicals by Education Level

In contrast to their demonstrated feelings that pesticides are dangerous chemicals, few respondents indicated a fear of using pesticides (Table 16).

Table 16. Education Level and Fear of Using Pesticides

FORMAL EDUCATION	I AM AFRAID TO USE PESTICIDES.			
LEVEL	AGREE	UNDECIDED	DISAGREE	
ELEMENTARY SCHOOL	11.1%	22.2%	66.79%	
HIGH SCHOOL	42.1%	31.6%	26.3%	
TECHNICAL SCHOOL	66.7%	33.3%	0	
COLLEGE	21%	15.8%	63.2%	
POST GRADUATE	40.0%	0	60.0%	

A substantial majority of elementary school level respondents felt unafraid to use pesticides (66.79%) (Figure 18). Respondents with high school level formal education were more inclined to express a fear of using pesticides (42.1%). It should be noted however, that they had a high level of respondents who were undecided about their feelings of fear of pesticide use. Those with a technical school level had a similar but stronger response. A full 66.7% agreed that they were afraid to use pesticides and none (0%) disagreed. A third (33.3%) of the respondents was undecided.

College and post graduate level respondents agreed with those at the elementary school level. The majority do not feel afraid to use pesticides. However, the difference between those that agree and disagree at each education level varies. Of respondents with college level formal education, 63.2% indicated that they were not afraid to use pesticides and 21% were afraid. At the post graduate level, 60.0% were not afraid to use pesticides but a full 40.0% of the respondents were afraid to use them.

This data tends to support null hypothesis 1. There was insufficient proof to indicate a relationship between education level and fear of pesticide use.



Figure 18. Afraid to Use Pesticides by Education Level

# SECTION 3: REASON FOR COMMUNITY GARDENING COMPARED TO RESPONDENTS USE OF PESTICIDES IN THE GARDEN PLOT

**Hypothesis 2=** Community gardeners with self-betterment or economic reasons for community gardening feel friendly toward pesticide use in the community garden.

Those who participate for social interaction will feel non-friendly toward pesticide use in the community garden.

Null Hypothesis 2= Community gardeners' motivations for community gardening are not related to their feelings about pest control methods.

Gardeners indicated their agreement with motivations for participating in a community garden by agreeing or disagreeing to a list of given reasons. These statements described three basic motivations for gardening, personal or self-centered reasons, economic reasons, and social reasons. Responses were compared to the gardeners agreement or disagreement with the statement, "I understand and use pesticides in my community garden" to determine if there was a relationship between a gardener's motivation for participating in a community garden project and their use of pesticides in the community plot (Figure 19).



Figure 19. Understand and Use Pesticides by Reason for Community Gardening

Respondents who disagreed with each reason for community gardening agreed with other reasons and their opinion in relation to pesticide use is more clearly reflected in those categories. While their negative response was noted, this analysis has focused on the respondents who agreed with the reasons for gardening that were presented.

Respondents who agree that they community garden for relaxation were divided on pesticide use (Table 17). Almost half use pesticides in their community garden plot (44.9%) and a few less do not use pesticides (40.6%). Only 10.4% of the respondents were undecided on one or both of these ideas

SELF IMPROVEMENT REASONS FOR COMMUNITY GARDENING	UNDERSTAND AND USE PESTICIDES IN THE COMMUNITY GARDEN PLOT		
	AGREE	DISAGREE	
FOR RELAXATION			
AGREE	44.9%	40.6%	
DISAGREE	10.1%	4.4%	
TOTAL UNDECIDED	10.4%		
FOR EXERCISE			
AGREE	31.8%	28.8%	
DISAGREE	24.2%	15.2%	
TOTAL UNDECIDED	14.3%		
FOR FUN, NOT WORK			
AGREE	34.3%	40.0%	
DISAGREE	14.4%	11.4%	
TOTAL UNDECIDED	9.1%		

Table 17. Self Improvement Reasons and Pesticide Use

Respondents who agreed with exercise as a reason for community gardening were similarly split between pesticide use (31.8%) and non-use (28.8%) (Figure 20). However, 24.2% of those who disagreed that exercise was a reason for participation used pesticides and only 15.2% did not use them. Almost as many respondents were undecided (14.3%) as those who disagreed with both exercise as a reason and pesticide use in their plot. It was interesting that many respondents who disagree that exercise is a reason for community gardening use pesticides in their community plot.

Fewer respondents who garden for fun did use pesticides (34.3%) than did not use pesticides (40.0%). Only 9.1% of the respondents were undecided.



Figure 20. Pesticide Use by Self-Improvement Reasons for Community Gardening

The almost even division between those who use pesticides (52%) and those who did not (41.6%) was also reflective of the respondents feelings toward self-centered reasons for community gardening. Of the respondents who agreed with self-centered reasons for community gardening, about half use pesticides and half do not. From this data, it appears that having self-improvement reasons for community gardening has little relation to community gardeners feelings about using pesticides in their community garden plot. The Null Hypothesis #2 of this study is proven.

Reasons for community gardening that reflect economic motivations were indicated by a positive response to the statements "I save money by raising my own vegetables" and "Without my garden, I would not have enough to eat" (Table 18). The reason "to have enough to eat" implies a stronger need than "to save money".

ECONOMIC REASONS FOR COMMUNITY	UNDERSTAND AND USE I	PESTICIDES
GARDENING	AGREE	DISAGREE
TO SAVE MONEY		
AGREE	52.1%	39.48
DISAGREE	2.8%	5.6%
TOTAL UNDECIDED	7.8%	
TO HAVE ENOUGH TO EAT		
AGREE	11.8%	8.8%
DISAGREE	44.18	35.3%
TOTAL UNDECIDED	10.5%	

Table 18. Economic Reasons and Pesticide Use

A large portion of those who agreed that saving money was a reason for their participation in the community garden used pesticides in their community plot (52.1%) (Figure 21). Only 39.4% of those agreed with saving money did not use pesticides in their plot. A few were undecided (7.8%).

Of those who gardened to have enough to eat, 11.8% used pesticides and only 8.8% did not. A few were undecided (10.5%). The small percentage of respondents in this category reflected information reported earlier indicating that a large portion of respondents disagreed that without their garden, they would not have enough to eat (75%).



Figure 21. Pesticide Use by Economic Reasons for Community Gardening

Based on this data, it is apparent that a relationship exists between respondents' economic reasons for community gardening and their use of pesticides in their community plot. In both cases, respondents who agreed with economic reasons for community gardening also were more likely to use pesticides in their community garden plot. The Null Hypothesis #2 is disproved and Hypothesis 2 is supported.

Response to the statements "I have made new friends by gardening in a community plot" and "I garden in a community plot to improve my neighborhood" represented the fulfillment of social interaction needs as reasons for community gardening (Table 19).

SOCIAL INTERACTION REASONS FOR	UNDERSTAND AND USE P	ESTICIDES			
COMMUNITY GARDENING	AGREE	DISAGREE			
TO MEET PEOPLE, MAKE FRIENDS					
AGREE	47.8%	34.38			
DISAGREE	6.0%	11.9%			
TOTAL UNDECIDED	13.0%				
TO IMPROVE THE COMMUNITY	TO IMPROVE THE COMMUNITY				
AGREE	30.28	28.6%			
DISAGREE	25.4%	15.8%			
TOTAL UNDECIDED	18.2%				

Table 19. Social Interaction Reasons and Pesticide Use

Almost half of the respondents who have made friends in their plot indicated using pesticides (47.8%) (Figure 22). Only 34.3% of the respondents who have made new friends did not use pesticides.

The respondents who community garden to improve their community were almost evenly divided on pesticide use (30.2%) and non-use (28.6%). A large number of respondents who do not garden to improve their community use pesticides in their plot (25.4%). There were many respondents undecided on this issue (18.2%).



Figure 22. Pesticide Use by Social Interaction Reasons for Community Gardening

The results of this analysis indicate some relationship between social interaction as a reason for community gardening and pesticide use in the community garden. Respondents who have made friends in their community garden were more likely to use pesticides than not use them.

However, those who community garden to improve their community were almost as likely to use pesticides in their plot as not use them. Perhaps pesticide use serves as a point of positive interaction between gardeners, opening new friendships between them based on discussions about pesticide products. Respondents apparently drew no connection between pesticide use in their community plot and their actions to improve their community.

The Null Hypothesis #2 is disproved. However, the relationship is opposite to the relationship proposed in Hypothesis #2 of this study.

#### CHAPTER 5

#### CONCLUSIONS AND RECOMMENDATIONS

This chapter will summarizes the results to tests of hypothesis 1 and hypothesis 2, discuss the implications of key results and draw conclusions based on the data. There will also be a discussion of several other points brought out in this survey of community gardeners in Lansing, Michigan. The chapter will conclude with recommendations for further study and the implications these results may have for community gardening program planners as well as organizations concerned with urban dwellers and their environment.

### CONCLUSIONS FOR HYPOTHESIS 1

This study classified respondents as pesticide friendly or pesticide friendly in their feelings toward pest control methods that could be used in the community garden. Respondents indicated pesticide friendly feelings by agreeing to the statements; "I understand and use pesticides," "Pesticides are necessary for a productive garden," and/or " Pesticides are safe, if they weren't, stores would not sell them to the public." Pesticide unfriendly feelings were indicated by the respondents' agreement with the statements; "I am afraid to use pesticides," and " "Pesticides are dangerous chemicals."

In the first level of analysis, respondents' feelings were compared to their education level. The analysis was done in the form of a test of hypotheses 1 and the null hypothesis 1. Their response to five statements about pest control provided five parameters that were assessed in relationship to the respondents' education level (Table 20).

Ta	ble	20.	Summary	of	Hypot	ches:	is 1	Test	2
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PARAMETERS FOR FEELINGS ABOUT PEST CONTROL	SUPPORT HYPOTHESIS 1	SUPPORT NULL HYPOTHESIS 1
1.UNDERSTAND AND USE PESTICIDES		х
2.PESTICIDES ARE NECESSARY	x	
3.PESTICIDES ARE SAFE	x	
4.PESTICIDES ARE DANGEROUS		х
5.AFRAID TO USE PESTICIDES		x

In analysis of the first parameter, there was no significant relationship between the respondents level of education and their agreement with the statement, "I understand and use pesticides." This response supported the null hypothesis 1.

There was a relationship in the second parameter. There was a significant correlation between respondents' level of education and their agreement with the statement, "Pesticides are necessary for a productive garden." The higher the level of respondents' education, the less likely they were to agree with this pesticide friendly statement. This result supported hypothesis 1.

Analysis of the third parameter also showed a significant negative correlation. It was between respondents' level of formal education and their agreement with the statement "Pesticides are safe, if they were not, stores would not sell them to the public." The higher the education level, the more likely respondents were to indicate pesticide unfriendly feelings. This result supported hypothesis 1.

The fourth parameter examined indicated no relationship between the level of education and agreement with the statement "pesticides are dangerous chemicals." This response supported the null hypothesis 1.

The fifth parameter of feelings toward pesticides was response to the statement, "I am afraid to use pesticides." Respondents with high school or technical school education levels were the only groups with a majority that expressed fear of using pesticides. This tends to support the null hypothesis 1. However, there were a large number of respondents undecided about the statement.

There was a difference between practice and feelings in the questionnaire. One of the parameters, response to the statement "I understand and use pesticides," actually

assessed respondents practices rather than their feelings. In this case, there was no relationship evident between education level and the community gardeners' practice. Grouping this parameter with the other four, which all focused on feelings, may have affected the results.

Also, one would expect a direct negative relationship between response to the opposite statements "pesticides are dangerous," and "pesticides are safe." Results, however, did not show such a relationship. This is probably because the clarity of the statement "pesticides are safe," was diluted by an additional clause, "if they weren't, stores wouldn't sell them to the public." Respondents could have been disagreeing with the safety of pesticides, or with the idea that stores only sell safe products.

Parameters two and three of the five parameters used to assess community gardeners' feelings toward pest control provided strong evidence that the higher the education level, the more likely respondents were to feel unfriendly towards pesticide use in their community garden plot. The first parameter assessed practice rather than feelings. In a third parameter, " fear of pesticides," a large number of the respondents were undecided. Two out of the five education levels in parameter five, high school and technical school, expressed fear of using pesticides, a pesticide unfriendly feeling.
In conclusion, a rigorous interpretation of these results indicates support of the null hypothesis 1, there is no relationship between community gardeners' education level and their feelings toward pest control methods. However, there is sufficient evidence to indicate that skepticism of pesticides increases as education level increases in community gardeners.

#### CONCLUSIONS FOR HYPOTHESIS 2

In the second level of analysis, respondents' reasons for community gardening were compared to their feelings toward pest control methods. This was done by testing hypothesis 2 and null hypothesis 2.

Feelings toward pest control were defined the same as in the first level of analysis, pesticide friendly and pesticide unfriendly. Responses to several statements were used to define categories of reasons for community gardening (Table 21). Respondents who agreed that they gardened for relaxation, for exercise, or for fun were classified as gardening for self-improvement reasons. Those who agreed that they garden to save money or to have enough to eat indicated economic reasons for community gardening. Respondents indicated social interaction reasons for community gardening by agreeing that they participated in the garden "to meet people; make friends" and "to improve my neighborhood."

PARAMETERS: MOTIVATION FOR COMMUNITY GARDENING	SUPPORT HYPOTHESIS 2	SUPPORT NULL HYPOTHESIS 2
SELF-IMPROVEMENT	NO	YES
ECONOMIC	YES	NO
SOCIAL INTERACTION	SUPPORTS RELATIONSHIP OF OPPOSITE DIRECTION	NO

Table 21. Summary of Hypothesis 2 Test

The data indicated that having self improvement reasons for community gardening has little relationship to the respondents' response to the statement "I understand and use pesticides." This tends to support the null hypothesis 2.

There was a strong relationship between respondents' economic reasons for community gardening and their use of pesticides in the plot. Those with economic reasons for community gardening were much more likely to use pesticides in their community plot. This supports hypothesis 2.

There was also a relationship between those who garden for social interaction reasons and pesticide use. Those respondents were more likely to use pesticides in their community plot. The relationship demonstrated by the data was opposite to the one proposed in hypothesis 2. But, the null hypothesis 2 was not supported either. Respondents who community gardened for social interaction reasons were more

likely to use pesticides in their community plot. Perhaps pesticide use actually serves as a forum for interaction between community gardeners. Gardeners can discuss pesticide products and share them with others they encounter in their plot.

Respondents who participate in a community garden to improve their neighborhood are slightly more likely to use pesticides than not. They see their activities in the garden as improving the appearance of their neighborhood and strengthening feelings of community. However, they apparently do not see a connection between those activities and the environment affecting practice of pesticide use. A similar result was described by J. Haris in his study of gardeners in Germany.<sup>133</sup> Haris concluded that private gardeners and allotment owners attached importance to environmental protection, but were oblivious to any polluting of the environment that they themselves might be causing. Here again, the relationship between reason for community gardening and feelings toward pest control was the opposite of the relationship proposed in hypothesis 2, but the null hypothesis 2 was not supported by this data.

In summary, the results from two out the three parameters used in this section of the study indicate that a relationship exists between community gardeners' reasons for participating and their feelings toward pest control

<sup>&</sup>lt;sup>133</sup>Haris, p. 151.

methods. However, the data indicates a relationship opposite to that proposed in hypothesis 2. Respondents who community garden for economic or social interaction reasons are more likely to feel friendly toward pesticide use in their community plot. One half of the respondents who community garden for self-improvement reasons felt friendly toward pesticides and one half felt unfriendly toward pesticides.

#### GARDENERS LEARNED FROM EACH OTHER BEST

The results of this survey also provided some interesting information on aspects of the community gardeners in the Self Help Garden Project that were not encompassed in an analysis of the hypotheses presented.

One such aspect was the respondents' feelings on how they learn best. Most respondents felt that they learned about gardening best by watching an experienced gardener and imitating him/her. Very few respondents felt they learned to identify garden pests by attending workshops. In fact, a large number of respondents specifically disagreed with the idea that they learn about garden pests from workshops. Workshops have been a popular medium for transmitting information about pest control and pesticide use to the public. It is a technique commonly used by agriculture extension agents as well as community garden program workers.

Program planners and people educating urban dwellers about environmentally affecting practices such as pest control may wish to consider approaches other than workshops. Demonstrations by experienced gardeners in each garden plot may be perceived as more effective. Education programs could capitalize on gardener-to-gardener information networks. A big brother/sister type program, where experienced gardeners adopt or assist less experienced gardeners may also meet with success.

### RESPONDENTS PERCEIVED OTHER GARDENERS AS DIFFERENT

The survey also reviewed community gardeners perceptions of their fellow gardeners. Results indicated that respondents perceived a distinct difference between their personal reasons for community gardening and their fellow gardeners' reasons for participating in the garden. This indicated a gap between the participants' purposes and his/her perception of successfully meeting those goals.

Few respondents gardened to provide themselves with needed food, yet most believed that others participated in the project for that purpose. There are a few possible explanations of this dichotomy. One of the garden projects' purposes is to provide needy Lansing area residents with a means to food. Respondents may have felt that while they themselves didn't participate for that reason, the purpose

of the program was an admirable and important one, a purpose that could be met through participation in the program.

It is important to note that about 90 families of Hmong immigrants who participated in the program did not respond to this survey. They were not included in the gardening program's mailing list because they did not receive newsletters during the 1990 garden season. Many of these new immigrants have low incomes and struggle to supply themselves with needed food while they learn to communicate in English and adapt themselves to a new culture. Their reasons for participating in the program, therefore, were not tallied as part of the data. However, the survey respondents may have included their perceptions of the Hmong immigrants in their assessments of fellow gardens reasons for participating in the program.

The data in this section of the survey also indicated that while many program participants garden for social interaction reasons, to meet people and improve their community, they did not perceive others as participating for those reasons. Because social interaction cannot be successful without the participation of others, it would appear that many program participants did not perceive a success in their goal of interacting with fellow community gardeners. This sort of assessment of program participants' perceptions of other gardeners can indicate a need for increased horizontal communication, communication between

program participants in addition to communication between program administrators and participants. To promote the community development aspects of an urban gardening program, program planners may need to energetically promote interaction between gardeners rather than expect that interaction to occur spontaneously when program participants share community garden space.

## PESTICIDE FRIENDLY FEELINGS BUT NOT PRACTICES

This survey was primarily concerned with community gardeners' feelings about pest control. However, respondents were asked to quantify their use of pesticides in the community garden during the 1991 garden season. Despite the fact that about half of the respondents felt friendly towards pesticide use in their community plot (Figure 11), a majority of respondents (78.3%) spent no money on weed control and 83.8% spent only one to ten dollars on insect control. This data indicates a gap between feelings and practice amongst community gardeners. Similar gaps have been illustrated in the literature between people and their practices that affect the environment.<sup>134</sup>

<sup>&</sup>lt;sup>134</sup>See pages 42 and 43 of this report.

#### **RECOMMENDATIONS FOR IMPROVING COMMUNITY GARDEN PROGRAMS**

Program planners as well as participants, funders, and others interested in community gardening should be aware that there are differences between gardeners' reasons for participating, what they perceive other participants' reasons are, and some of the goals the program planner hopes to accomplish. Addressing these differences can improve the program's effectiveness. It can also affect the participants' perceptions of the program's success.

One cannot assume that community gardeners have a low level of education. In this study, 80.3% of the respondents had completed high school or above. Nearly half (44.6%) of the respondents had completed college or above. Nor can one assume that education level will affect feelings or practice concerning pest control. This realization can impact the approaches that program planners and environmental regulators take in addressing environmental issues in urban areas.

Community gardeners value in garden demonstrations and relative-friend information networks for learning about gardening. They do not value workshops as a method for learning about garden pests. Personnel responsible for the education programs can use this information to develop appropriate means to inform participants.

Community gardeners who participate in the program for economic reasons may not see the benefits to integrated pest

management techniques (IPM) and organic gardening techniques. They see a benefit to pesticide use in their community plot. They may not be willing to forgo pesticide use without persuasive, effective information on the economic benefits of organic, environmentally friendly gardening techniques.

#### **RECOMMENDATIONS FOR FURTHER RESEARCH**

A few problems with the survey instrument used in this study became apparent upon analysis of the response. Clarification and restructure of some of the statements could reduce doubt associated with the responses. For example, the "technical school" level of education should be better defined or included into one of the other educational categories, either high school or college. The statement, "Pesticides are safe, if they weren't stores would not sell them to the public, " should be simplified to "Pesticides are safe." This would better represent the feeling toward pest control intended in the study.

It would be interesting and useful to investigate the actual pest control practices of community gardeners, rather than their feelings about pest control. An assessment that quantifies respondents' practices in their community plot could show a different picture of pesticide use than the one presented in this study.

The results of this survey indicated a relationship between community gardeners' reasons for gardening and their feelings about pest control. There are a number of other characteristics of community gardeners that could be compared to their feelings. Parameters such as gardener's age, sex, income, and location could be compared with their feelings about pest control as well as with their practices in the garden. The information provided by such studies could be useful to a variety of organizations concerned with urban dwellers and their interaction with the environment.

This study also revealed some interesting results concerning gardening education. Research of the methods used to teach and learn community gardening could be conducted by testing different programs or educational media for their effectiveness. The results could provide educators with more effective tools to reach their audience.

Program administrators and funding agencies could find it useful to conduct surveys similar to this one on other community garden programs in other cities. A more comprehensive view of the international community gardening movement would result from comparisons of those results.

In summary, there are a multitude of questions about the practices and purposes of community gardening. Community gardeners represent a segment of urban populations that

interacts closely with the environment. Research into questions about this populace provides useful information to community gardeners and others concerned with urban dwellers and their interaction with the environment. BIBIOGRAPHY

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APPENDICES

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# APPENDIX A THE SURVEY QUESTIONNAIRE

#### APPENDIX A

#### SURVEY OF COMMUNITY GARDENERS

This survey was developed by a community gardener who is a graduate student at Michigan State University. You can help me complete my studies by answering as soon as possible and returning it. The survey is already stamped. Just fold it up and drop it in the mail! If you have any questions or problems, just call Sue Corcoran at 487-6005. Please leave a message if my machine answers. Thank you very much for your help!

Section I. EDUCATION/EXPERIENCE

Q-1.Please indicate how strongly you agree or disagree with the following statements.

(Please check one for each statement)	Strongly Disagree	Disagree	Agree	Strongly Agree	Undecided
1. I learn more about gardening from friends and family, not books or classes.					
2. I read articles in newspapers and magazines to plan my garden.					
3. I learned to identify weeds and insects by going to workshops.					
4. For me, books are the best way to find out how to treat pests.					
<ol> <li>I learn best by watching an experienced gardener and doing what they do.</li> </ol>					
6. I know enough to garden almost anywhere.					

Q-2.Which of these best describes

your knowledge of gardening?
(please check one)

beginner [] average [] almost expert [] expert [] Q-3. How many years have you been gardening? (Please check one) 0 to 2 years 2 to 4 years

4	to 6 years	[]
6	years or more	[]

0

[]

Q-4. Please circle the higher	st level of formal e	ducation you have o	ompleted.	
Elementary School	High School	Technical School	College	Post-
12345678	1234	1234	1234	1

Q-5. Do you currently own the following items?

(please check those you own now)

- Fiyers or pamphlets about garden insects []
- Books or magazines about gardening []
- Newspaper articles about gardening [] Video films of gardening techniques []

<u>Graduata</u> 2 3 4 5

Q-6. Please c	Q-6. Please check yes or no.	
Did you ever.	<u>Yes no</u>	
Work on a f	farm? [][]	
Get peid for	farm work? [] []	
Take a gen	dening class? [] []	
Teach a ga	rdening class? [] []	

#### APPENDIX A

Section II. REASONS FOR COMMUNITY GARDENING

Q-1. Please indicate how strongly you agree or disagree with the following statements.

(Please check one for each statement)	Strongly Disegree	Disagree	Agree	Strongly Agree	Undecided
1. For me, the best thing about gardening is the exercise.					
2. Gerdening is important because it helps me relax.					
3. I have made new friends by gardening in a community plot.					
4. I garden in a community plot to improve my neighborhood.					
5. Gerdening is my hobby. I do it for fun, not work.					
6. I save money by raising my own vegetables.					
7. Without my garden, I would not have enough to eat.					

Q-2. Which of these reasons <u>best</u> describes why you participate in a community garden?

(Rank them from 1=most important, etc.)

For physical exercise	I	1
For relaxation	ſ	1
To meet people;make friends	ſ	1
To improve my community	l	]
To save money	l	1
To grow needed food	l	1

Q-3.In your opinion, why do others garden in a community garden? (Please check the <u>one</u> best answer)

For physical exercise	0
For relaxation	11
To meet people;make friend	<b>b</b> []
To improve the community	[]
To save money	11
To grow needed food	n

Q-4. How often do you vielt you plot during the growing sessi	r <b>garden</b> on?
(Please check one)	
one time a month	0
2-3 times a month	11
1-3 times a week	11
3-more times a weak	0

# Q-5. When you visit your genten, how much time do you usually spond here?

w usually spend here?	
(Please check one)	
less then 1/2hour	[]
1/2 hour to 1 hour	[]
1 to 2 hours	[]
2 or more hours	0

#### APPENDIX A

# Section III. GARDEN PEST CONTROL

Q-1. Please indicate how strongly you agree of	r disagree with the following statements.

(Please check one for each statement)		Strongly Disegree	Disegree	Agree	Strongly Agree	Undecided	
1. I understand and use pesticides in m	ny community garden.						
2. Pesticides are dangerous chemicals	-						
3. Pesticides are necessary for a produ	ctive garden.						
4. There is no such thing as a good insect.							
5. I am straid to use pesticides.			ļ				
6. Pesticides are safe. If they were de- sell them to the public.	ngerous stores would not						
Q-2. When do you use posticides on your garden? (please check the <u>one</u> best response)			Q-3.How were weed and insect problems in your garden this year? (please check one)				
Before the pests hit my garden       []         When I first notice any pests       []         When the damage reduces my crop       []         Almost never; not worth the time and money       []         Never, I don't believe in using them       []			High [] Average [] Low [] Don't know []				
Q-4. From the list below, please check to (check all those which you have used	he products which you hav )	e used in yo	ur communit	y gerden (	slot during ti	ie past two years	
BT=BaciliusThuringensis[]     Lime Sulphur     []       Detamaceous Earth     []     Malathion     []       Dezinon granules     []     Mulch, soil builder     []       Dipel     []     Ortho Green Weed       Homemade remedies     Preventer     []       (garlic,pepper,etc.)     []     Rotenone     []		Sevin [] Tomato-Vegetable Dust [] Weed-B-Gane [] Others (please list) []					
Insecticidal Scep [] Roundup [] Q-5. How much money did you spend this year for past control? (please check one for each)		Q-6. is con	Q-5. Is posticide use permitted in your yes no community garden pict? [] []				
ineect control weed control		Are	you a garde	n coordina		0.0	
su [] 50 \$1-10 [] \$1-10			YOUR	OMMEN	<b>18</b> :		
\$10-20 [] \$10-15 \$20-more [] \$20-more	[] []		THANK	YOU FOF	NYOUR CO	OPERATION !	

S. Corcoren Michigan State University Department of Resources Development Rm. 330A, Natural Resources Bidg. East Lansing, MI 48824-1222

# APPENDIX B INTRODUCTION LETTER IN FIRST SURVEY MAILING



SELF-HELP GARDEN PROJECT

c/o lingham Co. Health Dept. Food Bank P.O. Box 30181 Laneing, MI 48909

(517) 887-4307

Sponsored by The Greater Lanung Ford Bank

October 30, 1991

Dear Gardener:

The survey you have just received is being conducted by Sue Corcoran, through Michigan State University. Over the years, the Self-Help Garden Project has worked with the University on a couple of different studies, that have provided valuable information on garden project participants.

At their September meeting, the Garden Coordinators voted to have the Self-Help Garden Project participate in this survey. Your name and address have been released for the purpose of this survey only. Thank-you for your cooperation.

Sincerely. Jan Ryan /

Garden Project Coordinator

#### IMPORTANT DIRECTIONS

The PRIMARY GARDENER should answer this survey. He or she is the person who spent the most time at the garden. If you do not wish to answer the survey, please return it anyway so that your address can be removed from the list.

DO NOT WRITE YOUR NAME ON THE QUESTIONNAIRE. Your answers will be anonymous and all information will be kept in the strictest confidence. The number on the front of your survey is to help keep track of returns and assure that only official questionnaires are counted.

IF YOU HAVE ANY PROBLEM with a question, please <u>contact Sue at 487-6005</u> between 8 am and 10 pm. When you have completed the survey, please fold it with the stamped side out and drop it in a mailbox.

The questionnaire has three sections. I. Education II. Reasons for Gardening III. Insect and Weed Control. It should take about 10 to 30 minutes to finish.

THANK YOU FOR YOUR TIME AND COOPERATION. Happy Gardening!

Sincerely yours,

Sue Sue Corcoren

APPENDIX C FOLLOW UP LETTER AND REMINDER CARD FOR SURVEY MAILINGS



October 30, 1991

Dear Gardener:

The survey you have just received is being conducted by Sue Corcoran, through Michigan State University. Over the years, the Self-Help Garden Project has worked with the University on a Couple of different studies, that have provided valuable information on garden project participants.

At their September meeting, the Barden Coordinators voted to have the Beif-Help Barden Project participate in this survey. Your name and address have been released for the purpose of this survey only. Thank-you for your cooperation.

Sincerely. San 16 Jan Ryan D

Barden Project Coordinates 

#### December 8, 1991

Dear Gardener,

STURN YOUR SUMMY TOOL IN A STATE OF SUMMY SUMMY

Thanks! Sue Corcoran Sue

#### IMPORTANT DIRECTIONS

The person who spent the most time at the garden should answer this survey. If you do not wish to answer the survey, please return it anyway so that your address can be removed from the list.

DO NOT WRITE YOUR NAME ON THE QUESTIONNAIRE. Your answers will be anonymous and confidential. The number on your survey is for tracking returns so that only official questionnaires are counted.

IF YOU MAVE ANY PROBLEM with a question, please call sue at 487-6005. When you have completed the survey, please fold it with the stamped side out and drop it in the mail.

THANK YOU FOR YOUR TIME AND COOPERATION. Happy Gardening!

### APPENDIX C

Dear Self Help Gardener:

About two weeks ago, you received a survey. It is VERY IMPORTANT TO RETURN IT as soon as possible! I need your opinion to complete my study. Call me at 487-6005 if you have questions or need another survey to complete. Thank you for your help. Sue Corcoran Michigan State University APPENDIX D UNIVERSITY COMMITTEE FOR RESEARCH OF HUMAN SUBJECTS APPLICATION AND APPROVAL Appendix D

#### MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH AND DEAN OF THE GRADUATE SCHOOL EAST LANSING . MICHIGAN . 48824-1846

October 28, 1991

Susan M. Corcoran 320 Natural Resources

RE: A STUDY OF RELATIONSHIPS BETWEEN THE LEVEL OF EDUCATION, THE REASON FOR PARTICIPATING IN A COMMUNITY GARDEN, AND PERCEPTIONS OF PEST CONTROL BY COMMUNITY GARDENERS IN THE SELF HELP GARDEN PROJECT OF LANSING, MICHIGAN, IRB #91-488

Dear Ms. Corcoran:

The above project is exempt from full UCRIHS review. I have reviewed the proposed research protocol and find that the rights and welfare of human subjects appear to be protected. You have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to October 25, 1992.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

David E. Wright, Ph.D. Chair, UCRIHS

DEW/deo

cc: Dr. Peter Kakela

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