EXTENSION-SPONSORED COMMUNITY GARDENS IN NORTHEAST WISCONSIN: Exploring "Cultural Differences in Use"

By

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INTRODUCTION

1.1 Purpose of the Study

In 1998, University of Wisconsin-Extension's Northeast District secured funds from the University of Wisconsin System to support the development of urban gardening efforts in four counties in northeastern Wisconsin (see Appendix A). The "Urban Initiative" grant united Brown, Outagamie, Winnebago, and Fond du Lac Counties in 1999, through the establishment of a full-time garden coordinator position with a directive to both establish new and develop existing educational programs centered on shared-use urban gardens.

In this District, one of Extension's first efforts to program through community gardening had begun as early as 1976 in Winnebago County, where a community garden was developed on vacant land near the County fairgrounds. Although this garden was later relocated, many of the garden's users moved with it to its new location, and it remains the longest-lived association of community gardeners in the District. In Brown County, a horticulture agent provided the impetus for garden development in Green Bay, organizing community gardens at various locations in the City of Green Bay in the mid-1970's through the early 1980's. These gardens provided space to urban residents for growing produce for several years, but were dissolved due to development pressures, lack of leadership, or limited resources for adequate coordination.

In the 1990's, three new community gardens were developed with support from UW-Extension nutrition educators in downtown Green Bay. These gardens continue to exist, making fruitful use of city-owned and private vacant properties. Following 1999 and the establishment of the full-time coordinator position, community gardens were developed in urban areas of Fond du Lac and Outagamie County, and two more developed in the Green Bay area, with support from UW-Extension's "Urban Initiative" funds. A total of eight community gardens were in existence in the Northeast District by the year 2000.

As in Extension-sponsored community gardens in Milwaukee, Racine, Kenosha, and other major cities in Wisconsin, gardeners of Hmong heritage make up a significant proportion of their users in the Northeast. As noted below, almost seventy percent of all participants in the Northeast District using one of these eight community gardens in 2000 was Hmong.

Prior to 1999, gardens were developed by agriculture, horticulture, or nutrition educators in conjunction with their more traditional Extension programs. Community garden-based programming, as developed in the District, constituted a relatively small proportion of the outreach activities of those educators. Special concern for instruction that was tailored to the garden participants' ethnicity, literacy, and educational interests often could not be given priority. However, with the creation of a new position to expand outreach specifically through community gardens, resources for a full examination of these issues were available for the first time.

This study provides some insight into the question of why such a high proportion of community garden plots supported by UW-Extension in the Northeast District—and, indeed, throughout the State—are used by gardeners of Hmong heritage. It will also provide some guidance to Extension instructors and administrators using limited funds to develop educational, garden-based programs in the Northeast District and elsewhere. Toward this end, the study compares profiles of Hmong and Caucausian community gardeners, exploring general demographics as well as establishing baseline data on the adoption of common horticultural practices known to result in improved yields and cost savings. Client profiling is considered an essential tool for Extension program development and delivery (Bazik and Feltes, 1999). A variety of baseline data on gardening practice will be useful as Extension educators seek to measure and report the success of future educational efforts. Ideally, increased adoption of practices recommended by Extension for food production in Wisconsin will result in increased yields, leading to better nutrition, greater savings, and an overall improvement in quality of life for program participants. Furthermore, if the effectiveness of this garden-based instruction can be documented and shared, government bodies may be more likely to adopt this model for social and community development (Lewis, 1992).

Yet, the unique background and experience of the Hmong in the United States raise some difficult questions for Extension educators offering garden-related programs to this population. A question asked frequently by garden program administrators in the Northeast District is: are Hmong community gardeners interested in learning about and adopting new, non-traditional practices for food production and use, or do they participate in community

gardening programs principally to recreate or maintain traditional agricultural practices? Although these two "orientations" are not necessarily mutually exclusive, alignment with one primarily over another carries some implications for the educator's programming emphases. Understanding Hmong and Caucasian participants' reasons for involvement in Extension community garden programs will help educators determine educational needs, and to address those needs through culturally-sensitive instruction.

1.2 Cooperative Extension's Approach to Education

Throughout its long past, a common philosophy has connected the numerous models Cooperative Extension has employed in delivering education: to help people identify their own problems and opportunities, and then to provide practical, research-based information that will help them overcome the problems and take advantage of opportunities (Vines and Anderson, 1976). Some organizational values shared by Extension include: 1) a quick response to societal needs and concerns; 2) an emphasis on problem-solving; 3) development of practical and useful programs; and 4) a high standard of excellence in programming (Safrit et.al., 1995). Although originally applied to education of the rural layperson in agriculture and home economics, the values and methods of Extension continue to be relevant in an urban setting with clientele of diverse ethnicity and background.

One of the earliest models for what was to become Cooperative Extension was the farmers' institute, established by state boards of agriculture after 1819. The institutes provided practical instruction on agricultural topics through on-farm demonstrations lasting one to five days (Vines and Anderson, 1976). Legislation introduced in 1857 and signed in 1862—the Morrill Act—provided for 30,000-acre land grants to states for the purchase of college sites, experimental farms, and eventually the development of formal curricula in agriculture and the "mechanic arts." Legislation signed in 1887 added the Agricultural Experiment Stations to the land-grant colleges, establishing research as a recognized function of these institutions. The farmers' institutes became a primary means of disseminating research findings of the Experiment Stations. Faculty from the land-grant institutions in the fields of agriculture and home economics served as resource persons to the farmers' institutes (Vines and Anderson, 1976).

"Extension work", as this dissemination of practical agricultural information came to be known, received federal funding with the passage of the 1914 "Smith-Lever" Act, which provided for cooperation between the USDA and the land-grant colleges. During successive periods of national crisis, Cooperative Extension directed wide spread programs for local food production and preservation which gave rise to the "liberty gardens," and later the "victory gardens," considered by some to be the direct predecessor of today's community gardens (Kaufman and Bailkey, 2000). In the following decades, Cooperative Extension continued to apply knowledge and expertise to local, state, and national problems, such as the Great Depression. Once again addressing a pertinent social issue, Cooperative Extension

spearheaded an effort to establish community canning kitchens as part of an intensive food production and conservation effort (Vines and Anderson, 1976).

The mid-1900s saw a revolution in agriculture in the United States, with the advent of technologies that raised farm production capacity: hybridized seed, chemical pest control, and developments in tillage and fertilization practices. Cooperative Extension provided information and demonstrations to rural producers, helping them substantially increase farm productivity (Vines and Anderson, 1976).

Extension in larger metropolitan areas across the country began supporting urban agriculture as a major program area as early as the 1970's. In keeping with earlier models of Extension work, educators sought to address pertinent problems faced by city residents. Urban agriculture exemplified this problem-driven approach. For example,two eastern land-grant universities—Cornell and the University of Georgia—developed programs that addressed a variety of social issues in the city, through the vehicle of urban agriculture.

Some issues that have been addressed through community gardening and related training in these larger cities are community food security, community organizing around food production, youth employment, small business incubation and training in direct marketing. Through collaboration with non-profits that are involved in food production and distribution, Cornell Extension continues to promote direct marketing of produce through strategically-located farmers' markets. The beneficiaries of these efforts are often recent immigrants

(Kaufman and Bailkey, 2000). Atlanta's Extension has developed and changed, from earlier community garden management to entrepreneurial training, with a focus upon guiding its students through the state's support and regulatory structure for processing and marketing value-added agricultural products.

1.3 The Hmong: History, Culture, and Agriculture

For many recent immigrants to the United States, urban life represents a radical change from the isolated village life left behind in their country of origin. An overview of the Hmong immigrants' common heritage and experience demonstrates how great this change has been. A look at prior agricultural practice emphasizes the challenge for Extension educators in building desirable and useful programs for recent Hmong immigrants.

The term "Hmong" refers to a tribal ethnic group, which originated in Mongolia and later occupied mountainous regions in the southern provinces of China and Southeast Asia (Trueba and Zou, 1990). The Hmong people associate themselves with one of four culturally distinct divisions: Striped Hmong, Flowery Hmong, Green/Blue Hmong and White Hmong. The most overt difference between the four groups is observed in the style and color of traditional dress, explaining the association with color and pattern; these divisions also reflect dialect and general lifestyle differences (Trueba and Zou, 1990).

Hmong in northeastern Wisconsin are thought to be mainly blue/green, estimated at 90 percent of the total Hmong population, with a much smaller proportion of white Hmong (Ly, 2001). However, research to confirm this estimate could not be located. These divisions do not supercede a common identity, shared by all Hmong. As the ethnic identity of the Hmong is considered to be very strong, they should not be regarded as separate tribes, but as one distinct people (Cooper, 1984).

Unrelated to these four divisions is a kinship structure that is common to all Hmong people living in China and Southeast Asia. The surname of male heads of household indicates the clan with which a family identifies. Clans are exogamous, meaning that marriage is forbidden within the clan, and families within a clan consider one another relatives, even though they may be unrelated by birth (Cooper, 1984). Within the clan, major decisions for nuclear families and individuals are made by clan leaders. This kinship structure thus emphasizes group well-being over individual need, a view diametrically opposed to that of the Western, "developed" nations which tend to place primary value on the individual (McInnis, 1990). Clan structure entails that the average Hmong family would have a great number of relatives, which afforded a measure of security in isolated villages. If one family's crop failed, villagers pooled their resources so that no family would starve (Pfaff, 1995). The clan structure continues to have great influence on the Hmong in the United States (McInnis, 1990).

Generally landless subsistence swidden farmers, groups of Hmong began migrating from China into Southeast Asia around the turn of the century, inhabiting the forested regions over

3000 feet in altitude (Geddes, 1976). Although most Hmong living in the United States are refugees from military conflict in Southeast Asia, the majority of the Hmong people in the world today continue to live in the southern provinces of China. Only about half a million Hmong were living in North Vietnam, Thailand, and Laos of a total of about three million, according to 1957 Census figures (Cooper, 1984).

Researchers suggest that when the Hmong first arrived in Indochina, their staple crop was corn, which grew well in the relatively dry highlands of the region. Later contact with the Khmu, who inhabited lower or "midland" altitudes, and the lowland Lao led to the adoption of glutinous rice as a staple crop. Corn continued to be cultivated, but generally was consumed only by chickens, pigs, and livestock (Pfaff, 1995; Cooper, 1984). In addition to these staple crops the opium poppy, grown as a cash crop, women tended smaller gardens of cucumbers, melons, yams, eggplant, onions, beans, sugar cane, and a variety of herbs and spices, which served as the main sources of vitamins and minerals (Pfaff, 1995).

Planting of major crops such as corn, rice and opium took place in fields cleared of vegetation by "slash-and-burn" methods. Each Hmong family located, marked, and cleared its own fields. The household was the highest level of production: no cooperation between or within extended families was known to exist in any productive process (Cooper, 1994; Geddes, 1976). These fields were located as close to the village as possible, but as soil nutrients were depleted from continuous cultivation, greater distances were traveled to utilize suitably fertile land. In at least some cases, families traveled for hours on foot to reach their fields. Once

cleared, men would till an area with a plow drawn by an ox, and use a stick to poke holes in the soil. Women and children followed, dropping seed in the holes (Faderman and Xiong, 1998).

Despite the pressures of persecution, first in China in the late nineteenth century and later in Laos in the 1960s and 70s, the Hmong have tenaciously maintained a distinct culture, language, and geography (Hones and Cha, 1999). Some writers have suggested that this struggle has, in fact, strengthened their resolve to resist change—that this long oppression itself contributed to a distinct and enduring Hmong culture (Trueba and Zou, 1994). This tendency to resist "assimilating" influences from outside the Hmong culture, observed in the United States as well (McInnis, 1990), emphasizes the importance of this study: effective educational outreach to Hmong growers must take culturally-specific interests and learning styles into consideration.

1.4 The Hmong as Extension Clientele: Defining the Problem

By the year 2000, Wisconsin was home to thousands of Hmong refugees. In that year, Census figures showed that the highest numbers of Hmong in the state resided in the Milwaukee area, at nearly 9,000 individuals. Other counties outside the Northeast District showing high numbers of Hmong included Marathon (4,020), La Crosse (3,241), and Eau Claire (2,738). Urban Initiative funding, first made available in 1998 and applied to garden program support

in 1999, included four rapidly urbanizing counties with varying populations of Hmong. Of those four, Outagamie County showed the highest number of Hmong, at 3,293, followed by Brown (3,280), Winnebago (1,901), and Fond du Lac (406) (US Census, 2000).

The development of Urban Garden Programs in the Northeast District reflects an institutional interest in attracting and serving non-traditional, urban, and commonly under-served audiences (see Appendix B). Hmong gardeners provide a *de facto* audience due to their significant interest in using public garden space. Throughout the Northeast District's community gardens, Hmong users constitute between 50 and 95 percent of all users, or an average of 70 percent (see Appendix E).

This high proportion of Hmong community gardeners using Extension's gardens in the study area may be explained by greater food needs in comparison to other ethnic groups. This contention is supported by research conducted by the Brown County UW-Extension Nutrition Education Program in 1998 and 1999 (Kok et.al., 1999). Staff administering the USDA Food Security Survey found that between 83 and 100 percent of Hmong residents of the Green Bay area surveyed at local food pantries suffered from food insecurity. The Hmong experience the highest incidence of food insecurity, when compared with other ethnic groups. This problem may be causally linked to their disproportionate use of community garden plots. Yet, if food needs are the sole motivation for involvement in UW-Extension's community gardens, the present lack of any significant proportion of Hispanic, African-American, or Native American users, whose food insecurity status ranged from 42 to 74 percent between 1998 and 1999,

remains unexplained (Kok et.al., 1999). Other factors in addition to food needs are likely involved in the Hmong grower's decision to use community garden space available through UW-Extension-sponsored programs.

Despite the fact that community gardening provides a timely response to food security issues within the Hmong community, some assert that these programs do not conform to Extension's mission and values unless they provide information of use to participants. For the non-Hmong users of the District's community gardens, the transfer of information has not been problematic. Often, community gardeners of Caucasian heritage are familiar enough with Extension's particular culture, and are able to access information through typical means: phone inquiry, visits to the Extension office, or web-based inquiry. Direct mailings represent a common means of resource delivery to garden participants; indeed, this method was recommended as the best practice for information delivery to community gardeners in the US Department of Interior's "Recreational Community Gardening: A Guide to Organization and Development" (Drake and Lawrence, 1976). In Wisconsin's Northeast District and elsewhere, many Caucasian community gardeners are also active participants in Master Gardener programs, a traditional course of study commonly offered by county horticulture agents. Horticultural knowledge of gardeners who are proficient in English can be assessed quickly and easily. Thus, by employing traditional educational models, community garden-based programs effectively extend information to English-speaking audiences.

However, few community garden users of Hmong heritage speak any English at all; this initially anecdotal observation is supported with results of this study, presented below. Even among those who speak some English, many may not be capable of carrying on technical conversation typical of a Master Gardener seminar or other educational offering in horticulture. This language barrier may account for some of the problems associated with information transfer to Hmong audiences. In the author's experience, the District's community garden-based educational events have been poorly attended by Hmong garden plot users, and those who do attend usually cannot adequately contribute to program evaluation activities, including assessment of comprehension and program relevance.

Furthermore, the educator who is sensitive to the change in culture from rural tribal village to the modern city in the West cannot avoid questioning the ethics of instituting a program for one-way "transfer" of advanced agricultural technology. The Hmong lived in relative isolation in their homelands of Southeast Asia, following agricultural practices passed on through the generations. The very idea of utilizing the resources of a government agency to learn new methods of food production may be entirely foreign to the typical Hmong farmer, to whom government and oppression are synonymous. Narratives of Hmong immigrants who were first exposed to Western institutions in the relocation camps of Thailand indicate they perceived them as a direct challenge to their traditional ways of life (Faderman and Xiong, 1998; Hones and Cha, 1999). These experiences may have left the Hmong with a lasting distrust for Western institutions, which could exacerbate the problems associated with low-literacy and contribute to low attendance rates. Further, it is widely accepted that the

"reproduction of traditional cultural traits by refugees in a host country is crucial to successful socioeconomic adjustment" (Airriess, 1994). Extension's garden-based educational efforts involving Hmong growers should not challenge those cultural traits relating to food production.

The argument may still be made, of course, that growing plants in the United States requires knowledge of local conditions such as soil type and quality, pest and disease problems and remedies, and other matters that would not necessarily transplant readily from the Hmong immigrants' homelands in Southeast Asia. No doubt there is some amount of information that, if properly presented to Hmong growers, *could* result in improved yields or higher quality produce. In light of Extension's common values and methods, the institution's challenge is to help Hmong individuals and families identify *their own* problems and opportunities, and then to provide the information to help them overcome the problems and take advantage of the opportunities (Vines and Anderson, 1976). With this approach, educators can build practical and useful programs that will not threaten their Hmong clients' cultural identity—their "horticultural heritage".

1.5 Defining the Community Garden

Various definitions have appeared in the evaluation and historical literature on community gardening, due to the multiplicity of individuals and organizations that create and maintain, or

otherwise participate in, such gardens. Even *within* an organization that manages or provides support to community gardens, particular gardens may take any of a variety of forms. For example, in the *Evaluation of Community Gardens*, an examination of gardens that operate under the auspices of three County-based Cooperative Extension offices in southeastern Wisconsin, three distinct types of garden are considered: "rental" gardens, "youth" gardens, and "pantry" gardens (Lackey, 1998). While these types have certain characteristics that may distinguish them from typical, privately-owned or managed gardens, it nevertheless may be misleading for the purposes of this study to refer to them all as "community gardens."

Pantry gardens are defined as public spaces managed by volunteers from area communities, specifically for the production of food for donation to local pantries that serve the needy. The crops are grown communally; that is, there is no division of the area into plots for individual participants' use. However, in the sense that the pantry garden is accessible and open to public participation, and that it is run by and serves the needs of the local community, it is considered by Lackey to be a community garden. Similarly, the youth gardens managed and staffed by Extension in southeastern Wisconsin are considered community gardens, even though the areas may be communally cultivated, with a goal of teaching gardening skills and nutrition to young people.

It is the third type of garden considered in the *Evaluation of Community Gardens*, the "rental" garden, that shall here provide the model for our definition. This type of garden is an agricultural area that has been divided into individual plots, for individual or family use.

While the area is typically tilled, and sometimes fertilized, as a single parcel, the practices of planting, weeding, watering, and harvesting are assumed by distinct users in only designated portions of the larger garden space. It is this model that will be meant when the term "community garden" is used in this study. Certainly, no two community gardens will look exactly alike: one may be a quarter-acre in size and be located in the empty lot of an urban neighborhood, while the other may be twenty acres in size and be located in a suburban or even rural area. Within the Northeast District alone, community gardens vary widely in the number of plots available for use. Despite these variations, it is this structure—multiple, privately-used plots within a greater agricultural area—that defines a community garden in this study.

1.6 A Short History of Community Gardening

Attempting to identify the origin of the community garden in its most elemental form is probably about as feasible as identifying the origin of agriculture itself. Yet, there are those who venture what can be little more than an educated guess, looking into the distant past for indications of shared space for food production (Jobb, 1979; Bassett, 1979). One author surmises that all early agriculture may be considered "community gardening":

> Community gardening has its deepest roots in the oldest and most universal form of human settlement: the tribe living in a self-sufficient village. Every civilization began with, and many still today rely for survival on, community-based subsistence agriculture. Villagers would sow and reap together, staying near the settlement for safety, growing enough to feed their families (Naimark, 1982).

Other authors have pointed out that early European peoples also practiced a type of community subsistence agriculture during the Middle Ages, before the development of private ownership of property (Jobb, 1979). Again, in light of our definition, the question remains with regard to both early European and tribal agriculture whether and when cultivation was strictly *communal* in nature, or if distinct sections were cultivated, within a larger shared space, by distinct individuals or families—the community garden as it is here understood. In any case, it is clear that early peoples shared common spaces to grow and gather food, and that in some cases may have organized plot systems similar to today's community gardens.

There is some consensus among historians that community gardening as it is defined here had some heritage in the English allotment tradition (Irvine, 1999). The commons—collectively-owned areas used by local families for growing food, gathering firewood, and other resources—were being broken up, fenced, and rented for commercial agriculture at least as early as 1649. The double movements of enclosure and industrialization displaced rural agrarian peoples from the countryside to the city, where fringe lands or inner-city wastelands were divided into individual plots. The provision of these early community garden plots was made mandatory by the General Inclosure Act of 1845, which specified that the landless poor were to be compensated for their losses with a "small holding" of no more than a quarter of an acre (Crouch and Ward, 1994). The later Allotment Acts of 1887 and 1890, and the Local Government Act of 1894 required sanitary authorities in urban neighborhoods to provide community garden space. In the first decade of the new century, the Small Holding and Allotments Acts of 1907 and 1908 provided a standard 500-square-yard parcel to residents

for growing their own food (Naimark, 1982). These plots were important sources of food for the urban poor, suggesting a theme that will be seen again and again, and discussed by various authors: that community gardens gain in popularity during periods of economic or political instability (Crouch and Ward, 1996; Irvine, 1999).

Various authors also identify community garden development in the United States, which probably started as early as the 1890s (Irvine, 1999). Bassett (1979) identifies seven community garden "movements" in the United States, from the Potato Patches around the turn of the century, to the Liberty Gardens of 1917, to the Victory Gardens of the World War II era. The point is made that community gardening is promoted by government and reformers during difficult times to address widespread social or economic issues. Under the banners of work relief, nature study, civic beauty, patriotism, or wholesome food production, community gardening has been seen as one way of sustaining morale and supporting the social framework during difficult times (Bassett, 1979).

USDA Cooperative Extension has a long history of supporting community gardening in the United States. Considered the "kingpin" of the Victory Garden Program of the early to mid-40's, the Cooperative Extension service coordinated the program through county Extension offices nationwide (Jobb, 1979). Rationing and public support for the war resulted in the development of urban and rural public gardening areas throughout the United States. Guidelines for establishing a victory garden, distributed by the Extension Service, included recommendations regarding site location and and soil management tips. Garden leaders were

selected to represent neighborhood groups, and were tutored by Extension agents (Jobb, 1979).

1.7 Community Gardening in Wisconsin

The University of Wisconsin-Extension established it's first community garden in 1973 in Milwaukee County on County-owned property (Wisconsin Food Security Consortium, 2000). Five years later, in 1978, the organization committed the earliest substantial support for these efforts, with the establishment of full-time positions devoted to public urban garden development and related horticulture-based education. As part of the "23 Cities" programs being implemented nationwide by Extension, four full-time specialists, and twenty part-time assistants were hired to pursue a community gardening agenda in the Milwaukee area. Additional dollars were provided to the effort by the City of Milwaukee. To address the needs of the high percentage of Hmong growers involved in community gardening, a full-time coordinator and four part-time garden assistants—all of whom were bilingual Hmong—were employed. For Milwaukee's urban growers—many of whom were Hmong and low-income—the years between 1978 and 1992 were the "heyday" of community gardening, with "literally a hundred" community gardens developed or assisted in the city by UW-Extension's first community gardening specialists in the State (Lukaszewski, 2001).

Although much of this early financial support for community gardening has waned, UW-Extension continues to fund garden management and development in the Southeast District. Milwaukee County employs a full-time Urban Garden Coordinator who provides garden maintenance and development oversight as well as educational programming in horticulture and community development. A recent partnership with Milwaukee Urban Gardens, a non-profit organization dedicated to establishing land trusts for community garden preservation, demonstrates the widespread public commitment to urban agriculture in a major metropolitan area.

Community gardening efforts are also underway in Eau Claire, La Crosse, Madison, and Wausau, with varying levels of support from UW-Extension. Perhaps not coincidentally, some of the cities with the largest Hmong populations also provide support for community gardening, including Eau Claire and La Crosse. In Madison, a city-wide community garden program is managed by the non-profit Community Action Coalition, with minimal support from Extension.

An informal survey conducted by UW-Extension and cited in the Wisconsin Department of Health and Family Services' Annual Report (December 2000) identified 133 community gardens in Wisconsin, distributed throughout 29 counties. This survey defined a community garden more broadly, however, than here. The study counted gardens of many different types, including "community gardens, rental gardens, youth gardens, school gardens, and gardens attached to residential care facilities, food pantries, shelters and other community

organizations." The results of this survey suggest that 40 percent of Wisconsin's counties have at least one community garden.

1.8 The Community Garden As Educational Model

Extension-supported community gardening can offer Hmong and other populations a local space for food production, socializing, exercise, and cultural expression (Lackey, 1998). As a programming tool, community gardens also have the potential to serve the interests of Extension professionals in a wide range of program areas, from nutrition and family living to agriculture and horticulture, to community development (Patel, 1991). Community garden-based programming offers at least three areas of opportunity to Extension educators working in these program areas: 1) new urban, minority, and traditionally underserved audiences are attracted through the opportunity to garden; 2) garden development results in the extension of university resources to locations where they may be readily utilized; and 3) additional program topics become relevant and desirable to these new audiences as a result of access to garden space. The following are examples from community garden program development in the Northeast District that exemplify these three opportunities. They demonstrate how community gardening can be understood as an "educational process" (Patel, 1991).

New Audiences: In the process of planning a new community garden in an urban neighborhood, Extension educators, volunteers, and other partners will necessarily contact surrounding residents to survey local interest and attract users. The decision to develop a

vacant space often evolved as a result of both availability of vacant land and proximity to target populations. In the Northeast District, new garden development has required little or no recruitment of users in near-downtown neighborhoods. Interested gardeners commonly approached garden developers for information about plot use, and waiting lists were consistently maintained. On a number of occasions, neighboring residents voluntarily placed stakes within the new garden after tillage was completed, to "claim" their garden plot. In the four counties under study, many of the gardeners who approached garden developers were of Hmong heritage. Even larger gardens located in urban fringe areas, such as Outagamie County's Casaloma Community Garden, attract substantial numbers of Hmong users. Many of these individuals may not interact with Extension educational programs in any other way.

New Opportunities for Programming: The gardens themselves in effect become neighborhood outreach facilities for a variety of program areas. Following initial contact, users become familiar with Extension resources and opportunities through meetings to organize the garden and assign plots. On every possible occasion, including garden orientation meetings, seasonal newsletters, and other regular contacts, gardeners are provided with horticulture- and nutrition-related resources, and additional information about other Extension programs and opportunities. Another potential educational resource for garden users includes the demonstration garden plot, maintained by a community garden user in exchange for a reduced plot fee. Signs are placed within these demonstration plots which draw attention to horticultural practices such as mulching, raised-bed gardening, and crop rotation. Bulletin boards are often maintained within the gardens, which feature Extension publications from

various program areas. Events such as a "community garden walk", made available to garden users and the general public, can serve to draw more area residents to programs both in and outside the gardens. Through a variety of means, the community garden becomes a new site for outreach and education—one that extends university research and knowledge to users where they need it most, and where they will be most likely to utilize it.

Programming Made Relevant By Community Gardens: Certain typical Extension programs become relevant to community garden users only after adequate space becomes available for food production. For those urban residents who are not homeowners, or who otherwise do not have ready access to any other garden space, the availability of a community garden plot to grow food has itself initiated horticulture, nutrition, or community development-related programming. In the Green Bay Area, the establishment of the "Marley Street Market Garden", a 19-acre facility geared toward food production for market gardeners, led to an interest in development of an Asian farmers' market. This community garden spinoff demanded technical and organizational support from Extension, local business development agencies, and others. This new program was developed as a response to clientele needs, which only became evident after sufficient gardening space was made available. The progression of this County's programming is similar to efforts of other Extension offices in larger metropolitan areas. For example, the University of Georgia Cooperative Extension developed an entrepreneurial urban agriculture program, which grew out of initial community gardening programs (Kaufman and Bailkey, 2000).

1.9 Scope of the Study

In general, this study explores cultural differences in use of community gardens managed by UW-Extension and partners in the Northeast District. As there are only two predominant ethnic groups using the majority of eight gardens involved in the study (Hmong and Caucasian), the inquiry centers around differences between these groups in six distinct areas: 1. general demographics; 2. horticultural practices; 3. benefits derived from plot use; 4. reasons for plot use; 5. program topic interests; and 6. preferred means of information delivery.

Besides the more obvious need for Extension program administrators and educators to assess interest in educational opportunities that could be provided through the gardens, there are other, more subtle questions that this study will address, which relate specifically to Hmong users. Why is gardening so important to the Hmong, that they would make up such a disproportionately high percentage of users? An obvious answer, and one which is often expressed anecdotally, is that the Hmong are an agrarian people, and have always gardened or farmed. One would naturally assume that, at least to some degree, their use of garden plots is a way to re-create a past lifestyle, or to maintain a cultural identity that is frequently challenged in the United States. However likely this explanation seems, it nonetheless benefits from a formal inquiry.

The Hmong people have been described as "fiercely independent", and show an "unusual tenacity" in the struggle to preserve their cultural identity (McInnis, 1990). Extension's current efforts in urban agriculture, reviewed above, lead to an inevitable question: how can the institution provide ethnic-sensitive educational opportunities that honor and celebrate diverse knowledge and practice, without being perceived as a force of assimilation? This study will help guide Extension educators in their efforts to provide quality programs for Hmong clients.

Finally, this study provides some insight for Extension administrators in charge of directing resources to address community needs. For the time being, there is some endorsement from Extension administrators for community garden support, regardless of the difficulties of educational programming noted above. These obstacles present unique challenges to educators who strive to follow more traditional models of research-based information transfer. In the Southeast District, where urban gardening has been supported for more than ten years with full-time staff, programming has been evaluated primarily for delivery of material, social, and psychological benefits, rather than delivery of research-based information that may result in changes in gardening practice (Lackey 1998). Indeed, the trend within Extension to address pertinent problems through issues-based programming has meant that "we increasingly confront situations where it may be difficult to provide our clientele with research-based programs that address the issues they identify in a manner acceptable to them" (Hansen, 1993). This study addresses the question of whether community gardening,

as a programming tool that represents a focus on a pertinent social issue, can still fit with Extension's philosophy and institutional values.

LITERATURE REVIEW

While a great deal of resources are available that describe and evaluate community gardening in general, few works explore the community garden as an educational tool, and none were found that specifically concern garden-related education for Hmong audiences. Thus, much of the following literature is evaluative in nature, exploring the social, psychological, and physical benefits derived by gardeners from their participation in a garden program. It is briefly reviewed here to illustrate the wide range of positive effects that community gardening may have on its users. The present study makes use of a brief evaluation of benefits as part of the broader effort of exploring patterns of use that may relate to ethnicity. Literature from the field of nutritional science is presented, insofar as it confronts issues relating to the Hmong, such as dietary changes, acculturation, cultural identity, and outreach.

The present study contributes to a growing body of literature that explores human issues associated with community gardening in particular and urban greening in general. Studies of this kind are themselves a part of a larger body of interdisciplinary literature exploring the "people-plant connection", which grew to prominence at least as early as the 1970's. Like many studies in this tradition, the present work is driven by a very practical need. The Coordinator of the American Horticultural Society's People/Plant Program alluded to this problem-driven approach when he wrote the following:

> With the people/plant concept, horticulture can discover new and vital dimensions in society. The questions concerning people/plant interaction will be answered because the pressures of human needs demand answers (Lewis, 1976).

One leading writer in this field is Diane Relf, Professor of Horticulture at the Virginia Polytechnic Institute and State University. As editor of *The Role of Horticulture in Human Well-Being and Social Development*, Relf has sought to "establish a research initiative on Human Issues in Horticulture" (Relf, 1990). One study included in this volume is "A Research Agenda for the Impact of Urban Greening", which utilizes input from an expert panel and board members of the American Community Gardening Association (ACGA). A specific area of research, which is addressed by the present study, concerns the "cultural differences in use" of urban community gardens. This issue was ranked as a priority issue by five or more ACGA board members (Francis et.al. in Relf, 1990). Given the ethnic distribution of program participants, Extension's Northeast District Urban Garden Program presents a rare opportunity to compare patterns of use, as well as educational interests and needs, of Hmong and non-Hmong users.

In comparing benefits derived from community garden use by Hmong and Caucasian users, the study draws upon a set of literature that focuses on their measurement. One early research article that evaluated benefits of community gardening in an urban setting is "A Dietary, Social and Economic Evaluation of the Philadelphia Urban Gardening Project" (Blair et. al., 1991). This study may be the first of it's kind, as the authors note that "no systematic or detailed evaluation of a U.S. community gardening project can be found in the literature." The project was a joint effort of the Pennsylvania State University Cooperative Extension Service and the Philadelphia Horticultural Society. In the year the study was conducted, the partners served a diverse audience of some 5000 families at 560 gardening sites, many of which are located in vacant lots (Blair et. al., 1991).

Blair's study informs the present inquiry insofar as it examined reasons for garden plot use across ethnic groups. However, there are some significant differences. Blair's study is broader in scope due to a greater ethnic diversity of program participants: gardeners of African-American, Caucasian, Hispanic, and Korean heritage are interviewed. And, as nutritionists, the authors focus more on questions of vegetable consumption and use. Although the authors explore the differences among various ethnic groups in regard to the benefits they derive from program participation, their study does not significantly confront problems faced by Extension educators in providing educational materials to community gardeners. However, the authors touch on the issue of providing nutrition education through community gardening:

> If diet is positively affected by gardening, then improving access to gardening could provide nutrition educators with an alternative to traditional methods of improving dietary behavior. Where low income is a barrier to following nutritional advice, gardening could possibly be an empowering component of a nutrition intervention strategy (Blair et. al, 1991).

The study does find a positive correlation between gardening in general and increased frequency of vegetable consumption, which is a desired outcome of Extension nutrition programs. Although the present study primarily seeks to examine the programming needs and use patterns of specific users, Blair's study is not without relevance. Her work substantiates claims made here regarding the cross-departmental value of community gardening for Extension.

As in the present study, Blair asked project participants why they garden, and then classified the responses by the percentage of participants who indicate various reasons. Ninety-five

percent of the respondents cited one of seven general reasons in the following proportions: recreation (21%), mental health (19%), physical health and exercise (17%), produce quality and nutrition (14%), spiritual reasons, including contact with nature (10%), self expression/self-fulfillment (7%), and cost and convenience (7%). The authors find these responses remarkable in that, "even in this predominantly inner city, low income sample the perceived monetary benefits of gardening were outweighed by the perceived positive effects of life quality and health."

Some generalizations are made in regard to ethnic heritage and the value of the community garden to those groups. The generalization made in regard to Korean garden users may have some significance here, as they represent respondents of Asian descent. While gardens in predominantly black neighborhoods served as social centers for the community, and gardens in Hispanic neighborhoods were seen as sources of neighborhood pride, the Korean users, who frequently worked together on their garden plots, saw the community gardens as a way to "reinforce social cohesiveness". Although couched in different terms, this finding is reaffirmed in the results of the present study.

Another related study also appeared in 1991. Ishwarbhai Patel, an Extension Agricultural Agent in Newark, New Jersey published "Gardening's Socioeconomic Impacts: Community Gardening in an Urban Setting" (Patel, 1991), the first of its kind in the literature in its specific emphasis on community gardening as a tool for Extension education. Patel's view of community gardening's purpose is instructive for other Extension staff working within rigid departmental divisions: his is an attempt to address problems of urban life that

transcend the boundaries of Extension program areas. Patel considers it an "educational process", and he remarks that community gardening has potential for improving users' "economic and social well-being." He alludes to the cross-departmental nature of garden-based programs for urban audiences, suggesting that youth leadership and nutrition agents could become more involved with community gardens. Although Patel is an Agriculture Agent and is thus constrained to pursue community gardening as another route to extend "research-based information" in food production to the public, he nevertheless perceives the many possibilities for a holistic approach to solving problems typical of urban audiences.

One common problem faced by urban populations is inadequate access to quality, culturally-appropriate foods, and the poor diets that may follow this lack of access. Patel's study involved interviews of 178 community gardeners, the majority of whom were black (75%) and Hispanic (19%). Although he provides no data on respondents' economic status, he suggests that they are particularly interested in gardening for economic benefit. He cites one gardener who states that "I plant varieties that I can't get at local markets or ones that are too costly." Indeed, more than one-third of surveyed gardeners cited "saved money" as an important benefit to community gardening. In measuring economic benefits of Extension-sponsored community gardens in Newark, New Jersey, Patel employs a formula developed by the USDA for converting garden area into "dollar value of production." Taking into account variables of garden area in square feet, crop intensity, crop quality, and length of season, Patel determines that the typical community garden plot of 720 square feet nets $500 in produce per year.

This and other benefits are listed in a table ranked by respondents in one of three categories: "life-quality" (including fresh food, improved diet, and personal satisfaction), "economic well-being" (money saved), and "social well-being" (including socializing, helping others, sharing the produce with others, feeling of self-sufficiency, and improved neighborhood). By looking into impact beyond a narrow departmental mission to transfer research-based information in horticulture, Patel finds evidence of positive change from community gardening that falls into the broader realm of socioeconomic well-being. By promoting community gardening, Patel and Rutgers Cooperative Extension may fulfill an educational agenda in horticulture, but Patel's mission in urban agriculture implies that the psychological, social, and economic impacts that follow from gardeners' active involvement in growing food overshadow the benefits derived from incorporation of research-based information into gardening practice. The concern for addressing pertinent social issues above and beyond a narrow emphasis on transfer of research-based information in horticulture alludes to an alternative approach for Extension in urban areas which is more problem-driven, and which incorporates the broader aims of community and economic development. Patel's efforts exemplify a shift in Extension programming, from a departmental and disciplinary structure to a focus on matters of wide public concern arising out of complex human problems (Bahn, 1991).

Yet, Patel does not neglect to examine the channels of information transfer within the community garden program. Also appearing in *The Role of Horticulture in Human Well-Being and Social Development* is Patel's earlier study of information transfer through program staff, printed media, demonstration gardens, and secondary transfer through friends,

relatives, and neighbors in a community garden (Patel in Relf, 1990). Patel maps the routes of typical Extension program topics, such as insect pest and disease control, mulching, and composting, from program staff to garden program participants. His findings show that more frequent contact with information through diverse channels results in greater adoption of gardening practices, leading to increased food production. He writes, "It is the cumulative effect on people through exposure to an innovation or practice repeatedly over a period of time that results in action" (Patel in Relf, 1990). Although his study does not explore issues of ethnicity or literacy, his emphasis on diversity of method likely applies to programming for Hmong community gardeners who, as the present inquiry will show, are heterogeneous in regard to English ability and literacy, as well as interest in program topics. Both of Patel's studies also inform the question of Extension's use of community gardening as an educational model, articulated above.

Dotter affirms the multiple positive impacts experienced by community gardeners in California, citing the 1977 California Council for Community Gardening's statement of purpose:

> Community gardening improves the quality of life for all people by: beautifying neighborhoods; stimulating social inter-action; producing nutritious food; encouraging self-reliance; conserving resources; and creating opportunities for recreation and education. (Dotter in Relf, 1990).

The City of San Jose is actively involved in community garden development, viewing the gardens as legitimate recreation as well as a "superb community development tool." With diverse membership, including Asians, the garden programs in this city have an interest in showing positive impacts from their "support for and preservation of cultural tradition" (Relf,

1990). Responding to a Conference on Refugees held in San Francisco in 1984 which identified the importance to these peoples of a "community of friends to share one's experiences and cultural heritage," Dotter shows that San Jose's garden programs are justified in their aim to "foster community pride and goodwill through cross-cultural association." While these city gardening programs are not associated with Extension in particular, they nevertheless reveal an orientation toward promoting and assessing the significant, though sometimes subtle, cultural benefits of community gardening.

Waliczek assesses the importance of community gardens related to quality-of-life perceptions of users based on Maslow's hierarchy of human needs model (Waliczek et.al., 1996). Statements relating to one of five categories (physiological, safety, social, esteem, and self-actualization) were scored and tested for statistical significance by variables of race, gender and city size. The study found significant differences in perceptions by male and female community gardeners, and gardeners in cities of varying size. However, the data most instructive to the present study concerned differences in perceptions revealed by comparisons of racial background: Caucasian, Hispanic, African-American, and Asian community gardeners are compared.

Of twenty-one quality-of-life statements in the five categories, Asian gardeners scored lower than gardeners in the other racial categories in all but seven. In the physiological ("I enjoy working outside") and safety ("I feel safe in the garden") categories, the Asian gardeners scored lower than gardeners of other heritage on all of eight statements, suggesting significant differences in values associated with gardening across ethnic groups. Asian

gardeners scored lower than gardeners of other heritage on all of eight statements, suggesting significant differences in values associated with gardening across ethnic groups. Asian gardeners scored higher than Caucasian gardeners in only five of the twenty-one statements grouped under "social", "esteem", and "self-actualization." Of these five statements, three relate to possible *cultural* differences in garden plot use, further explored in the present study. They are: "my gardening experience helps others", "gardening makes me feel good about my own abilities", and "I can teach my children to garden". As is explored below, these and other differences may stem from the vastly differing background and experience of Asian refugees and Caucasian, non-refugee community garden users.

METHODS

3.1 Survey Instruments

Data used in this study were collected in three phases. In phase one, a draft questionnaire was developed with questions grouped into one of six categories: 1. gardener demographics; 2. current horticultural practices in community garden plots; 3. benefits derived from participation in the garden program; 4. reasons for garden plot use; 5. interest in typical educational offerings; and 6. preferred method of information delivery. The initial list of questions was formulated from numerous sources over a period of several months, beginning in the Fall of 1999. Questions relating to general demographics and preferred method of delivery were informed by protocol developed by Extension professionals (Bazik and Feltes, 1999). Other areas of inquiry were derived from a list of questions provided to the author by an English-as-a-Second-Language (ESL) instructor at a local technical college (Appendix B). Initial drafts of the survey questionnaire were circulated among Extension horticulture and agriculture educators and Department Heads in the four counties under study. A new list was formulated, including a number of changes recommended by colleagues, which was then forwarded to an Extension evaluation specialist for comment, and revised again. Due to length, all the information elicited from the final survey questionnaire could not be presented and analyzed below. Only select data from this questionnaire is presented in this study (see Appendix C).

In phase two, Hmong interpreters administered the survey questionnaire during face-to-face and telephone contacts with randomly-selected gardeners of Hmong heritage. A total of 91 Hmong gardeners were interviewed in the four counties.

A total of 39 randomly-selected, non-Hmong program participants, all of whom happened to be of Caucasian descent, received the survey questionnaire via mail or were contacted via telephone by an English-speaking interviewer. All gardeners surveyed were selected randomly from databases of participants' names and addresses managed by the four County Extension offices or partnering agencies. See Appendix E for a detailed explanation of the proportion of interviews collected from the two comparison groups across the four counties. Survey questionnaire data was coded and entered into a spreadsheet for analysis using SPSS for Windows.

A second round of interviews, similar to Donald Hones' educational narrative interviews (Hones, 1999), followed the survey questionnaires. These interviews were intentionally open-ended, in contrast with the yes/no and short-answer questions administered in phase one. Three Hmong residents of Green Bay using an Extension-sponsored garden were asked to provide information about their perceptions of "Western" horticultural practices, their desire to maintain Hmong practices, and a variety of other questions relating to gardening practice and educational needs. Participants for these interviews were chosen with assistance from Chia Ly, a Hmong bilingual interpreter and part-time educator employed by Brown County UW-Extension. The interviewees were chosen to represent a wide range of ages: the youngest is in her mid-twenties, and the oldest are in their 60's. All the respondents live in an urban setting in Green Bay's near-downtown, west-side neighborhoods.

Although a series of questions was prepared for each interviewee, the sessions were lively and conversational in nature, and quickly took on direction of their own. Responses to the main questions of concern for this study are thus interwoven with other topics that arose in the course of the conversations. Transcripts of the narrative interviews, including questions and complete answers, are given in Appendix F.

3.2 Some Issues With Data Collection.

Despite instructions to administer the survey questionnaire one-on-one via telephone or in-person meetings, the interpreter hired to administer the surveys in Outagamie County collected data from gardeners through a number of small-group meetings. This fact became apparent when the questionnaires were returned and found to be answered uniformly by what appeared to be only a few gardeners. When questioned why so many surveys showed exactly the same responses, the interpreter stated that the gardeners had preferred to respond to the questions in groups, rather than individually. Although these responses may not, therefore, reflect the total range of responses of Hmong gardeners in Outagamie County, this data was retained under the assumption that all respondents within each of the groups who received the interview questionnaire did, in fact, agree with each response chosen by that group. Regardless of whether this is true, the fact that the questionnaires were not administered as was initially agreed remains instructive for others collecting data with Hmong interpreters. Perhaps the "agreement" was only one-sided, and in fact the desired procedure was not

adequately communicated. Perhaps the interpreter understood the instructions as presented, and chose an alternative approach out of expediency. Certainly, these respondents' response preference reaffirms Hmong communities' orientation to groups over individuals, as observed by at least one researcher (McInnis, 1990). This instance, at least, alludes to the difficulty in the overall effort to assess interest, present educational materials, and evaluate outcomes with Hmong clientele.

RESULTS

4.1 Gardener Profiles

The gender of the primary program participant—that is, the individual whose name had been submitted to UW-Extension or a partnering agency for garden plot registration—differed substantially between the two comparison subgroups of Hmong and Caucasian. Of the Hmong respondents, 85 percent were female; of the Caucasian respondents, only 44 percent were female. Hmong respondents ranged in age from 18 to 80, with a mean age of 43 years. Caucasian respondents were closer in age, with a range of 32 to 78 years. Caucasian gardeners also represented an older group as a whole, with a mean age of 52 years.

Questions relating to English ability and literacy have particular significance for the Hmong comparison group. Caucasian respondents responded with "Does Not Apply" to questions relating to English and Hmong speaking and reading ability on mailed questionnaires, indicating that 100 percent of these users spoke and read English, and did not read Hmong. For those Caucasian users contacted by telephone, all respondents indicated an ability to read English, and none could read Hmong.

Only 40 percent of the Hmong respondents indicated an ability to speak English. Reading ability was even lower for the Hmong users: only 17 percent indicated an ability to read English. However, more than half (61%) of the Hmong respondents indicated an ability to read Hmong.

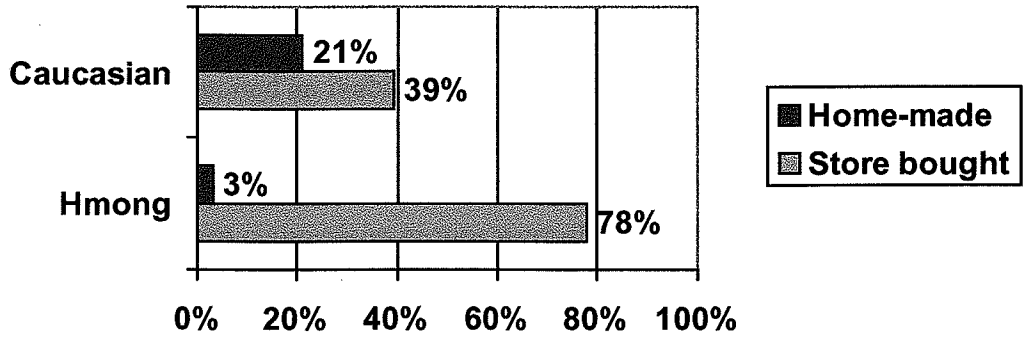
The vast majority of Hmong respondents reported Laos as their country of birth; of the 91 Hmong gardeners surveyed, only two reported other birth countries. The distribution of Hmong respondents' migration from their home country is relevant to this study in that it shows how recently the respondents were living in a village setting, presumably practicing traditional agriculture as described above. Consistent with local and national research, most Hmong respondents left Laos immediately following the fall of Saigon in 1975. Subsequently, the Hmong left Laos in another wave which crested in the late 1970's (Pfaff, 1995).

4.2 Differences in Horticultural Practice

Hmong and Caucasian respondents differ in regard to horticultural practices in the community gardens. Eighty percent of surveyed Caucasian gardeners indicated their intention to rotate crop locations in the following year, while only 39 percent of Hmong respondents planned to do so. Less divergence is apparent in regard to companion planting, defined in the low-literacy questionnaires as "growing certain plants together in the same place". Sixty-two percent of surveyed Caucasian garden plot users reported adoption of this technique, compared to 53 percent of Hmong users.

Notable differences between the comparison groups were evident with regard to use of pest controls in the community gardens. While use of home-made pest controls was more common among Caucasian gardeners, a greater percentage of Hmong users reported using store-bought products in their garden plots (Figure 1).

Figure 1. Percentage of Gardeners Using Pest Controls by Type and Ethnicity.



Caucasian
Home-made (N = 38; missing = 1)
Store bought (N = 39; missing = 0)
Hmong
Home-made (N = 88; missing = 3)
Store bought (N = 91; missing = 0)
Categories represent distinct questions each with potential range of 0 to 100 percent.

Gardeners were also asked to identify the store-bought substances or products used in their garden plots. Caucasian respondents reported a variety of products used, including plant-derived substances such as pyrethrin and rotenone, and chemically-synthesized substances such as diazinon and malathion. The most commonly used substance by far was diazinon, used by 67 percent of the Caucasian gardeners who used a pest control product purchased at a store. Malathion, the second most commonly used substance, was used by only 5 percent of the Caucasian gardeners reporting pesticide use.

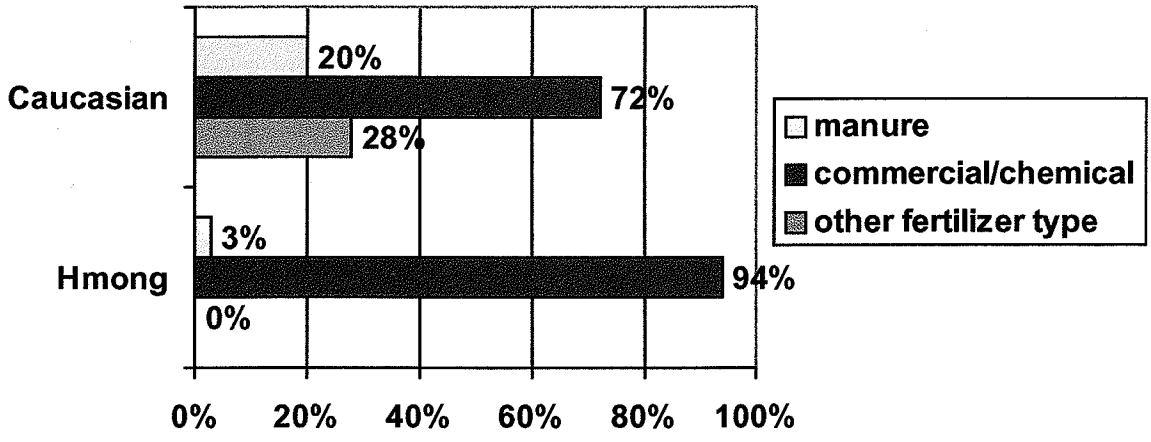
Hmong gardeners, in contrast, did not identify any specific products or substances. For 88 percent of Hmong gardeners indicating use of a pest control bought at a store, no product or substance was named. Those who offered any reply to the question stated "not sure", "don't

know", or "powder".

None of the Caucasian respondents reported an inability to understand information printed on the label of a pest control product. Thirty-two percent of Hmong respondents using a store-bought product reported an inability to understand label information.

Differences between comparison groups were also evident in responses to questions about use of fertilizer in community garden plots. Sixty-eight percent of Caucasian respondents used some kind of fertilizer in their garden plot, compared to only 40 percent of Hmong respondents. Type of fertilizer used also differed substantially across comparison groups. Hmong gardeners reporting use of some type of fertilizer showed a higher level of commercial/chemical fertilizer use and lower levels of manure use than their Caucasian counterparts (Figure 2).

Figure 2. Of gardeners reporting any fertilizer use, percentages by type and ethnicity.

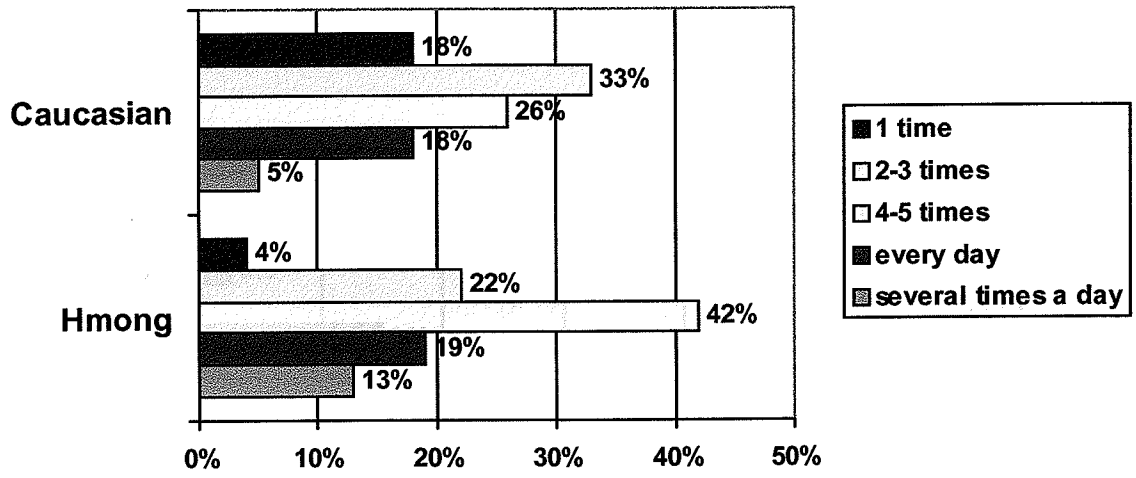


Caucasian (n=25; missing=1)
Hmong (n=35; missing=1)
Categories represent distinct questions each with potential range of 0 to 100 percent.

4.3 Benefits Derived from Program Participation

Differences across comparison groups were also evident with regard to benefits from plot use. In general, Hmong gardeners reported more frequent consumption of food grown in their garden plots than Caucasian gardeners (Figure 3). More Caucasian than Hmong gardeners reported consuming food grown in their plots between 1 and 3 times per week in the summer. Conversely, more Hmong than Caucasian gardeners reported consuming food between 4 times per week and several times per day in the summer.

Figure 3. Percentage of gardeners indicating various garden produce consumption frequencies by ethnicity.

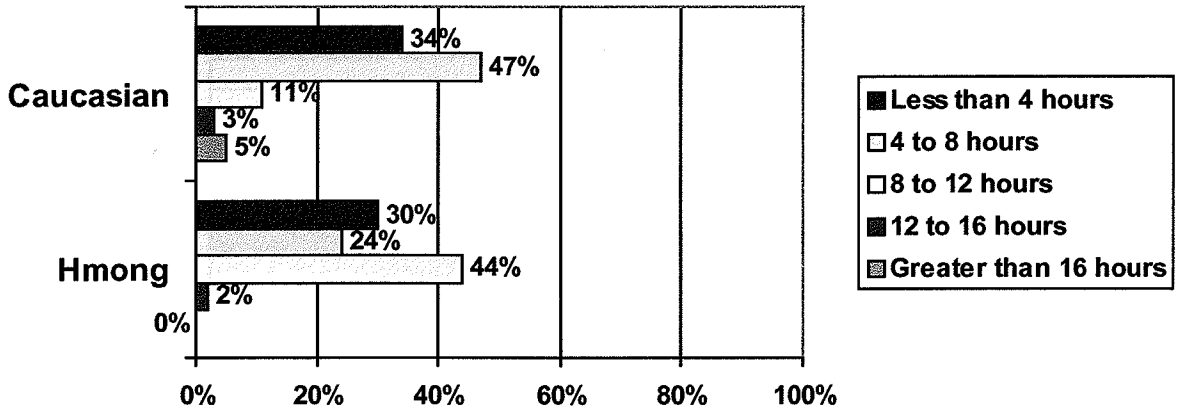


Caucasian (n=39; missing=0)
Hmong (n=91; missing=0)

The percentage of Caucasian and Hmong respondents reporting that they preserve food grown in their garden plots showed little variance between the two groups, at 87 percent and 96 percent, respectively.

Gardeners benefit from exercise in the community gardens. Responses across comparison groups in regard to time spent working in a garden plot per week showed a divergence similar to the responses relating to food consumption (Figure 4). That is, within the lower ranges (less than four hours and four to eight hours per week), percentages were higher for Caucasian gardeners. In the range of eight to twelve hours per week, percentages for Hmong gardeners were much higher, at 44 percent compared to 11 percent for Caucasian gardeners. However, a higher percentage of Caucasian gardeners reported working in their garden plots in the highest ranges: twelve to 16 hours and greater than sixteen hours per week.

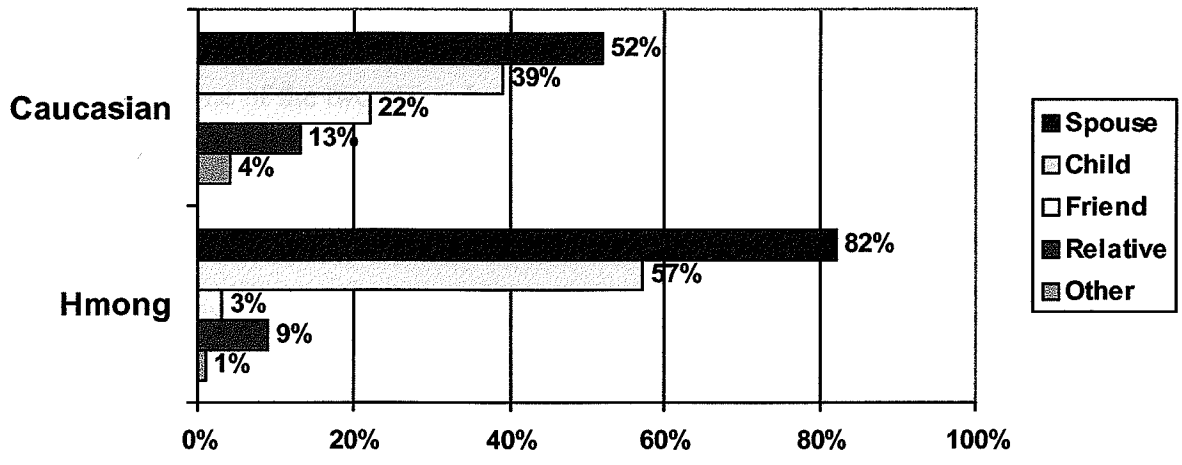
Figure 4. Percentage gardeners indicating various ranges of hours spent in garden plot per week by ethnicity.



Caucasian (n = 38; missing = 1)
Hmong (n = 91; missing = 0)
Respondents instructed to choose only one category.

A higher percentage of Hmong respondents indicated that they work with others in their community garden plots when compared to Caucasian gardeners, at 84 percent and 61 percent, respectively. Of those who work with others in their gardens, a higher percentage of Hmong gardeners work with their spouse or child, and a higher percentage of Caucasian gardeners work with a friend or relative (Figure 5). More Caucasian gardeners indicated that they had met someone new in their garden in the past year, at 87 percent compared to 66 percent of Hmong gardeners. Fewer Hmong learned something about gardening from another community gardener in the past year, at 21 percent compared to 58 percent for Caucasian respondents. For 63 percent of Caucasian respondents, the community garden is the only space available to them for gardening. For Hmong respondents, about half (47%) indicate that their community garden is their only available agricultural land.

Figure 5. Of respondents who report working with others, percentage by relationship and ethnicity.



Caucasian (n = 27; missing = 1)
Hmong (n = 76; missing = 0)
Respondents instructed to choose all that apply; each category represents a potential range of 0 to 100 percent.

4.4 Reasons for Plot Use and Interest in Program Topics

Analysis of gardeners' reasons for garden plot use addresses the question of possible resistance to Extension program topics by Hmong users. First, an attempt was made to determine whether program participants, in general, use community garden plots primarily for preservation of culture or traditions, or if food production is a more significant motivation for plot use, an obvious possible motivation given food insecurity rates cited above. Next, responses to potential reasons for plot use were related to respondents' interest in typical program topics offered in horticulture and other program areas.

Respondents were asked to rate a series of statements relating to potential reasons for using a community garden plot, on a scale of 1 to 4, with 4 indicating agreement with a statement "a great deal" and 1 indicating no agreement. Ten statements were presented, of which six corresponded to one of the two general categories: tradition/culture and production. Those statements included in the "tradition/culture" category include "maintain my family's farming traditions", "express my culture", and "spend time with family or friends". Statements in the "production" category include "grow food for myself and family", "grow food to give to relatives and friends", and "grow food to sell or trade". Other statements, such as "grow traditional food that I can't get at the grocery store" and "exercise" were not categorized, since they are either ambiguous or irrelevant to these categories. Mean values

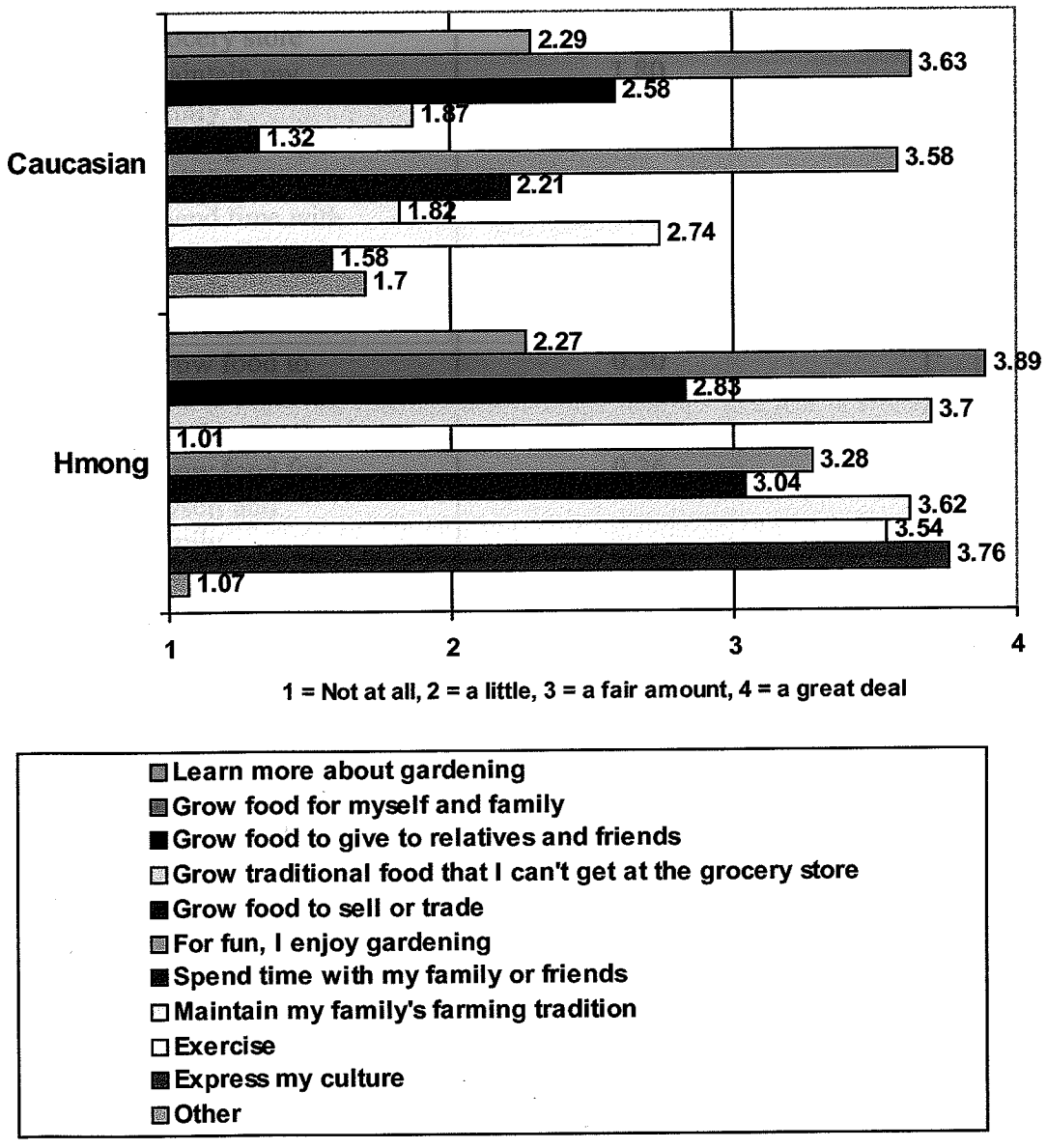
from the respondents were added within each of the two categories to calculate a single value for each grouping. To determine whether Hmong and Caucasian espondents displayed an overall "orientation" toward one category over another, the "production" sum was subtracted from the "tradition/culture" sum.

The mean value difference for Hmong respondents was 0.9, a positive value, indicating a higher overall rating for the reasons grouped under "tradition/culture" noted above. For Caucasian gardeners, the mean value difference was –0.64. This negative value indicates that Caucasian respondents rated the three reasons grouped under "production" slightly higher than the reasons relating to "tradition/culture". These results indicate an overall orientation to the "tradition/culture" category by Hmong respondents, and an overall orientation toward the "production" category by Caucasian respondents.

Reasons and mean ratings for Hmong and Caucasian respondents are given in Figure 6. This analysis also indicates differences in reasons for garden plot use between the two comparison groups. In general, Hmong respondents indicated higher rates of agreement with seven of the ten statements. By subtracting mean values of Caucasian respondents from values ascribed by Hmong respondents for each assessed reason, a picture of diverging motivations is formed. Differences in mean values are given in Table 1. Higher values indicate greater divergence in reasons for garden plot use between the two comparison groups. Positive values show reasons generally favored by Hmong respondents. Negative values show a higher overall rating by Caucasian respondents. More Caucasian respondents offered "other" reasons for garden plot use than Hmong respondents. Caucasian users cited "organic/no

chemicals", "artistic expression", and "try different varieties"

Figure 6. Mean values ascribed to assessed reasons for garden plot use by ethnicity.



Caucasian (n=39; missing=0) Hmong (n=91; missing=0)

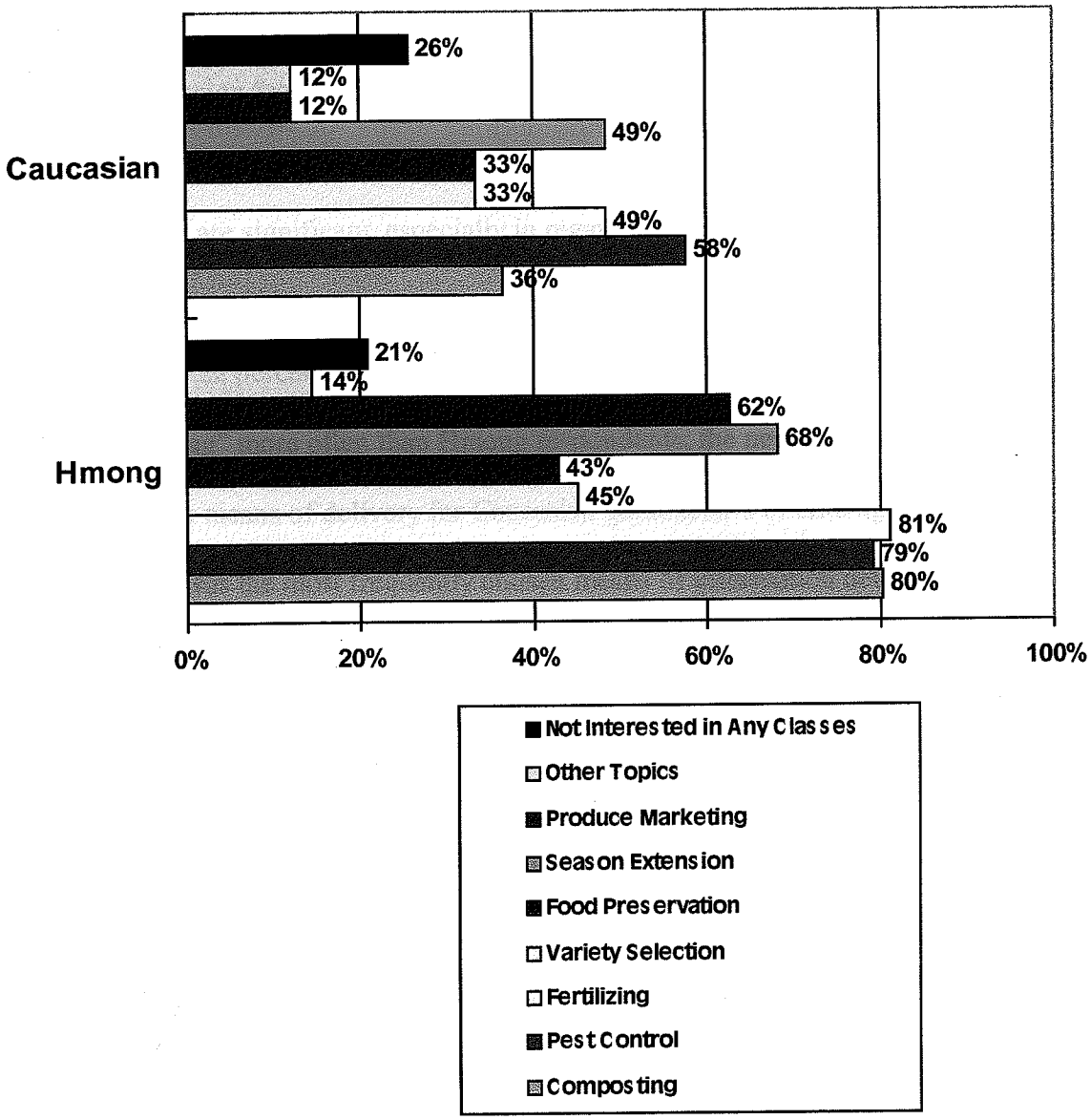
Table 1. Differences in Assessed Reasons for Garden Plot Use	
Statement	**Value***
Express my culture	2.18
Grow traditional food that I can't get at the grocery store	1.83
Maintain my family's farming traditions	1.80
Spend time with my family or friends	0.83
Exercise	0.80
Grow food to give to relatives and friends	0.30
Grow food for myself and family	0.26
Learn more about gardening	-0.02
For fun; I enjoy gardening	-0.30
Grow food to sell or trade	-0.31

*Calculated by subtracting mean values ascribed for garden plot use by Caucasian gardeners from mean values ascribed by Hmong gardeners.

among others; Hmong users offered "fresh air and a little peace" and "fresher food" as other reasons for plot use.

Interest in typical program topics offered "at a convenient time and place," and with an interpreter, differed between the two comparison groups (Figure 7). In general, Hmong respondents expressed more interest in typical programs, most of which involve horticultural production, but also include food preservation and marketing. Hmong respondents expressed more interest in every topic, and in some cases, divergence in interest levels was great. Eighty percent of Hmong respondents, for example, cited interest in an educational program in composting (explained in low-literacy English as "turning leaves and kitchen scraps into soil"), compared to only 36 percent of non-Hmong respondents. Other topics which showed divergence of twenty percentage points or more included pest control, fertilizing, and produce marketing. Interest levels differed most highly in respect to produce marketing, or "how and where to sell produce in your area", with 63 percent of Hmong respondents expressing interest compared to only 12 percent of Caucasian respondents. Overall, the percentage of Hmong Caucasian respondents who were "not interested in attending any classes" was about the same, at 21 percent and 26 percent, respectively.

Figure 7. Percentage of respondents indicating interest in program topics by ethnicity.



Caucasian (n=33; missing=6) Hmong (n=91; missing=0)

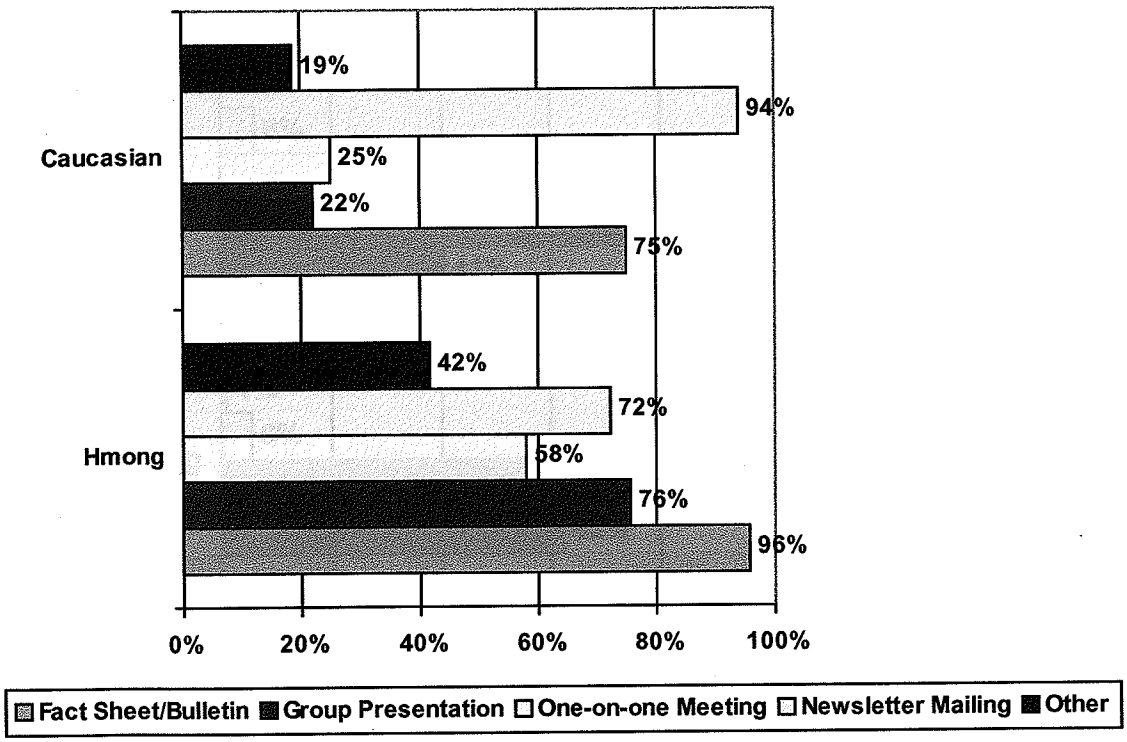
Respondents instructed to choose all that apply.

4.5 Information Delivery Preferences

Gardeners were asked how they would like to receive information. Possible choices included a newsletter mailed to the gardeners' home address, meetings in either a one-on-one or group setting, and Extension fact sheets or bulletins. Results are displayed in Figure 8. In general, Hmong respondents chose more means of delivery more often than Caucasian respondents. Some differences are significant, especially in regard to choice of "group presentation". Seventy-six percent of Hmong respondents chose this means of information delivery, compared to only 22 percent of Caucasian respondents. Caucasian respondents chose "newsletter mailing" more often than Hmong respondents; the newsletter was the most frequently chosen means of delivery for Caucasian gardeners. For Hmong gardeners, the fact sheet or bulletin was the most frequently chosen means of information delivery.

Gardeners were asked where they would like to receive information. For both Caucasian and Hmong respondents, "at home" was the most frequently indicated response, at 75 percent and 96 percent, respectively (Figure 9). The greatest difference in responses to this question was in choice of "at the UW-Extension building." While 41 percent of Caucasian gardeners chose this location for delivery of information, only 6 percent of Hmong gardeners indicated this choice.

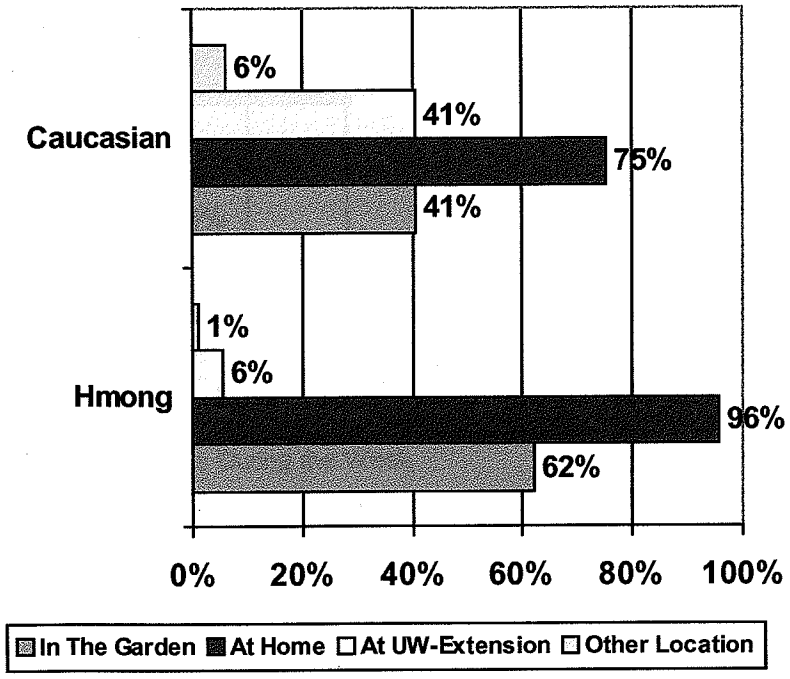
Figure 8. Preferred means of information delivery by ethnicity.



Caucasian (n=33; missing=6) Hmong (n=90; missing=1)

Respondents instructed to choose all that apply. Each category represents a range of 0 to 100 percent.

Figure 9. Preferred location of information delivery by ethnicity.

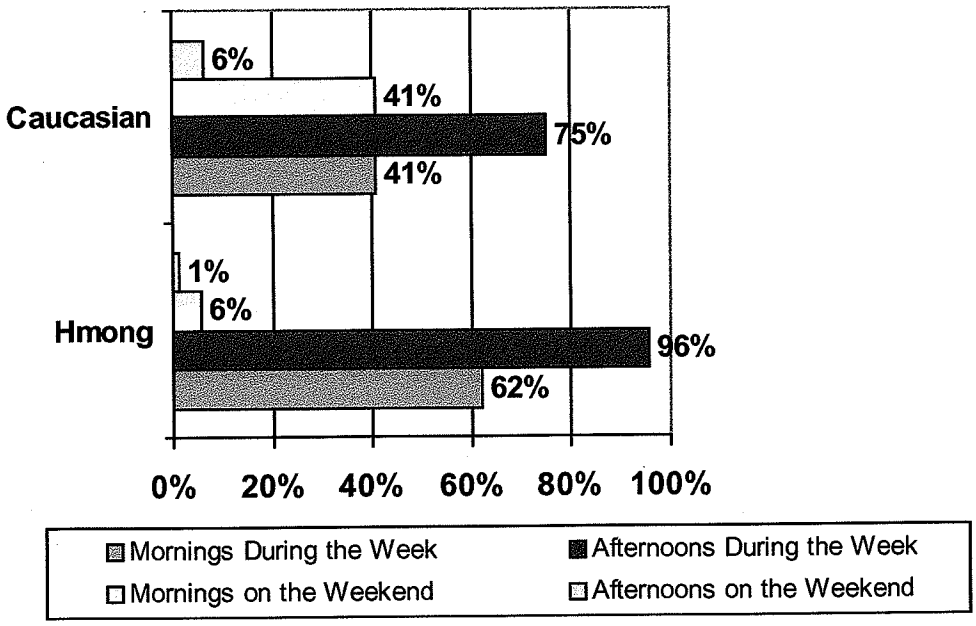


Caucasian (n=33; missing=6) Hmong (n=90; missing=1)

Respondents instructed to choose all that apply. Each category represents a potential range of 0 to 100 percent.

Differences were also apparent with respect to preferred time for information delivery (Figure 10). Very few Hmong respondents (6%) preferred "mornings on the weekend" while more than a third (41%) of Caucasian respondents chose this time. More Hmong than Caucasian respondents chose afternoons and mornings during the week, although choice of these times was relatively high for both comparison groups. Neither Hmong nor Caucasian gardeners preferred to receive information in the afternoon on weekends.

Figure 10. Preferred time of information delivery by ethnicity.



Caucasian (n=22; missing=16) Hmong (n=88; missing = 3)

Respondents instructed to choose all that apply. Each category represents a potential range of 0 to 100 percent.

DISCUSSION

5.1 Survey Questionnaire Data

While more Caucasian respondents were male, far more Hmong respondents were female. Gender roles relating to food production and preparation, and business development may demand different models of program marketing and delivery. As McInnis states, Hmong in the United States continue to be strongly influenced by a clan structure in which major decisions for nuclear families and individuals are made by clan leaders (McInnis, 1990). As some counties in the Northeast District move toward business development and other programming beyond the garden, educators should be aware of these roles. For Hmong participants, successful programming may need to include marketing that is directly targeted to decision-makers within a family or clan. Gender roles relating to food preparation and preservation are also likely to vary among Caucasian and Hmong participants, affecting program content and delivery.

Younger Hmong community gardeners overall may mean that family commitments compete with educational activities that may be offered through garden programs. With a mean age of 43 years, most probably left their home country in their 20's and 30's, spending a number of years in refugee camps in Thailand before arriving in the United States. They would generally be old enough to have learned how to grow food in their county of birth, using traditional methods. Educators may choose to explore traditional agricultural practice with their Hmong clientele, to determine whether they represent important means of cultural continuity or expression. Educators should also be aware of younger clientele, who may not

have learned to produce food in their country of birth. These participants may have different educational needs and interests than their elders.

Rates of English speaking and reading ability for Hmong respondents are quite low, suggesting a possible cause for generally low attendance for garden-related educational programming and related events. Few Hmong participants read English: program marketing, newsletters, and notices of meetings that are provided in English only will reach less than 20 percent of this audience. Since over half of the Hmong respondents are able to read in the written Hmong language, translation of program materials will be comparatively more effective than English-only materials. Commonly, written materials have been provided in both English and Hmong, although comprehension levels for these materials will be 80 percent at best, within the District's garden programs.

More information is needed in regard to comprehension levels for readers of the written Hmong language. Are there various dialects that may effect comprehension levels? Translation of program material, in the author's experience, has been a time-consuming and, therefore, expensive process. Perhaps reading the written Hmong language is similarly time-consuming for the typical reader, and translated materials are therefore ignored. In addition, it may be assumed that fewer Hmong will be able to read the written Hmong language in the future. Educators considering substantial investment in translations should be aware of these issues, and further explore comprehension levels with their Hmong clientele.

Programming conducted only in spoken English will be comprehensible to fewer than half of the Hmong community gardeners in the Northeast District. Assistance from bilingual interpreters must be considered essential for successful outreach, regardless of program content. Another related issue concerns the use of Hmong interpreters in conducting educational programs. Is the interpreter skilled enough to accurately convey program material of a highly complex nature? For example, in conducting classes in soil nutrient management, an educator may address concepts such as soil pH and chemical fertilization based on soil test reports. Translation of complex processes which require knowledge of algebra or chemistry may not be easily or readily transferred to participants in the Hmong language. Education levels of translators, and familiarity with concepts being presented, may significantly effect comprehension levels for Hmong participants.

To improve attendance levels for garden-related programs offered to Hmong gardeners, participants must be informed that a translator will be available, and this information must be presented through a comprehensible means. Anecdotal evidence from programming for Hmong participants in Brown County suggests that telephone calls made by a bilingual interpreter to invite Hmong participants to workshops or events may result in the highest rates of attendance. Of course, this option is expensive and time-consuming.

Differences in responses to questions relating to gardening practice suggest that Hmong and Caucasian program participants plant and manage their plots in different ways. These differences will require flexible programming which can be tailored to the divergent needs of these groups.

One major difference is evident in the practice of crop rotation. As the majority of Caucasian gardeners intend to rotate crops in future years, most of those who do probably understand that the practice provides an inexpensive means of nutrient and pest management, which could reduce the need for inputs of chemical fertilizers or pest controls. For Hmong growers, less than half of whom intend to rotate crops, classes or other instruction on this practice appear to be warranted.

Less dramatic differences between Hmong and Caucasian respondents are apparent with regard to companion planting or intercropping. Divergence between the comparison groups is less than ten percentage points, with more Caucasian gardeners practicing this technique than Hmong gardeners. The relatively high level of adoption of this technique, in comparison to crop rotation, by Hmong respondents may be explained by the fact that intercropping may be a traditional practice for the Hmong. In the narrative interviews, Mrs.Thao describes the process of starting crops in Laos, and states that "squash and cucumber goes with corn and rice" and "we plant opium and vegetables together, all in the same place." As discussed below, their prior experience with companion planting suggests that resistance to this practice is unlikely. In addition, Hmong growers who continue to grow a variety of plant species together, and who are experiencing success by their own standards, may represent an educational resource for other gardeners, both Hmong and Caucasian. The same may be said for Caucasian gardeners who are satisfied with plant yield and survival through companion planting. This group may provide a resource for others by demonstrating improved yield with intercropped, non-Asian varieties of plants.

Less than half of Caucasian respondents report using store-bought pest controls in their garden plot, while nearly 80 percent of Hmong gardeners use such products. One of the narrative interviews indicates that chemical pest controls are perceived as a necessary practice in the United States (see Yang interview, Appendix F), and that chemical use was generally unnecessary in Laos. The fact that Hmong gardeners are unable to identify the products they use is reason for concern, and an indication of a need for instruction in this area. If so many Hmong gardeners are using expensive and potentially dangerous products— in a shared area where children may be present— but yet cannot name the products being used, more education is needed to inform these gardeners about toxicity levels, proper safety measures for application, and non-toxic or less-toxic alternatives available. The majority of Caucasian gardeners who use store-bought pest controls are using Diazinon, rated as "highly toxic". A dose of "one drop to one ounce" ingested by an average 160-pound adult, could be fatal (Wyman and Pelliteri 1998). If Hmong gardeners are also using this product in similar numbers, the potential threat to the health of garden users and their children is undeniable.

Conversely, Caucasian gardeners appear to use more home-made pest controls which, presumably, are less costly and less toxic. Instruction in Integrated Pest Management (IPM) could address the potential dangers of chemical insecticide use, while offering alternative means of pest control. Aphids, for example, can be controlled with a soap and water solution, which is less costly and non-toxic than many commercial products. Other practices, including crop rotation and proper soil nutrient management also effect pest levels, and would be a part of programming that emphasizes IPM. Both Hmong and Caucasian

community gardeners could benefit from training in IPM, although a quick response to possible health threats due to improper use of toxic chemicals by Hmong users is particularly warranted.

Differences in use of fertilizers between comparison groups represents a significant finding, with implications for program emphasis. The relatively low percentage of Hmong respondents reporting any use of fertilizers (40%) may reflect traditional agricultural practices which, in some cases, did not require addition of any fertilizers beyond the ash produced from burning of trees and other vegetation during clearing of land (see Vang interview, Appendix F). However, urban Hmong growers in Wisconsin are obviously limited in their choice of agricultural lands, and thus may be required to maintain the same areas for production beyond the traditional two or three year period. Thus, as the use of *some* type of fertilizer–whether organic, commercial/chemical, or both–is important for improving and maintaining plant health and yield, instruction in this area is appropriate.

The type of fertilizer used by Hmong growers further indicates a need for program emphasis. Since the vast majority (94%) of Hmong respondents who use any fertilizer are applying commercial/chemical products, instruction in the use of soil tests to calculate application rates is warranted. Anecdotal evidence from prior programs in soil nutrient management indicates that Hmong community garden participants have not consulted soil tests posted in the gardens before purchasing and applying fertilizers. In two seasons of summer classes, attendees consistently report that they have never used soil test information. One garden admits that she has never performed a soil test, although she uses a product as a fertilizer in

her garden plot (see Thao interview, Appendix F). Due to low literacy rates, gardeners may not be able to interpret test report data, or understand various chemical fertilizer formulations. Educational programs should emphasize basic concepts, such as soil pH, major plant nutrients and their importance for plant growth, and simple calculations of input rates for commonly-available products. In the experience of the author, Hmong gardeners also need instruction in local product availability: who sells it, how to get there, what amounts should be purchased, and what the best local value is.

Instruction in the use of fertilizers could also include options besides commercial or chemical products, especially for Hmong gardeners. While these products improve plant yield, the addition of other substances in the form of soil amendments is essential for long-term soil health. Since some Caucasian gardeners use a broad range of fertilizers in their garden plots, including manure and "other fertilizer" such as compost, these participant may be utilized as an educational resource for others.

Consumption of produce grown in the community gardens is a significant benefit that participants realize through use of plots provided with assistance from UW-Extension. Other studies have addressed the question of whether participation in an Extension garden-based program results in increased consumption of vegetables or fruits, when compared with a control group that is not involved with Extension community garden programs (see, for example, Lackey 1998). The overall goal of the present study did not require a control group from outside the garden program, so a definitive impact on consumption cannot be made. However, a direct increase in vegetable consumption may be inferred. Of Caucasian and

Hmong respondents, 63 percent and 47 percent report that the community garden is the only available space for gardening. Thus, around half of all respondents are only able to garden because of their participation in an Extension program. Any produce consumed from the garden by these users could be considered an increase that directly results from program participation.

Hmong users report more frequent consumption of garden plot produce than non-Hmong users: 74 percent report consuming garden produce between four times per week and several times per day during the summer, compared to 49 percent of Caucasian users. Likewise, 51 percent of Caucasian respondents report consuming produce from their garden plot from one to three times per week in the summer, compared to only 26 percent of Hmong users. This difference points to the value in targeting Hmong for involvement in new community gardening programs developed by UW-Extension and partners. Not only are the Hmong most at-risk for food insecurity in some communities (Kok 1999), but they generally realize greater food-related benefit from their participation in community gardening than other participants in the Northeast District. Insofar as Extension values a "quick response to societal needs and concerns", and utilizes a problem-solving approach toward the development of "practical and useful programs" (Safrit et.al 1995), efforts to develop and sustain community gardens that serve needy inner-city residents are justified. These gardens go to the heart of a problem so common to Hmong families by making available a practical and useful program.

Similarly, the gardens appear to be more useful to Hmong users as a place for social interaction: 84 percent of Hmong users work with others in their plot, while 61 percent of Caucasian users work with others. Hmong users who do work with others most often work with nuclear family members. Hmong and Caucasian users spend varied amounts of time working in the gardens, amounting to a similar total number of hours per week spent by each comparison group. New friends are made in the gardens, and gardeners learn from one another from their contact in the plots. Again, we must infer that contact in the community gardens within and between families is a direct result of program participation, and that this contact represents an increase over and above that experienced by a non-participant family. But assuming the validity of this inference, we can see that the act of gardening in a common area necessarily involves some contact with family and friends, includes the formation, or affirmation, of relationships, and results in some amount of learning. For these reasons, Patel's reference to the community garden as an "educational process" is made clear.

In general, Hmong community gardeners use Extension-sponsored community gardens in the Northeast District primarily for reasons relating to their culture and tradition, while Caucasian gardeners use plots primarily for food production. For the Hmong, the gardens represent an important means to maintain practices that relate to cultural identity (Lackey, 1998; Relf, 1992). This finding helps to explain remarkably high levels of participation by Hmong, given their minority status in the Northeast District. This general orientation to cultural expression and maintenance of tradition further emphasizes the importance of assessing interest in typical Extension programming in horticulture. Educational materials

must not be presented as a challenge to traditional ways, but only and always as a supplement that may lead to greater success in the pursuit of their own, culturally-specific goals.

Overall, Hmong respondents express more interest in attending educational programs: 21 percent of Hmong users answered that they were "not interested in attending any classes" compared with 26 percent of Caucasian users. This finding is significant in that it addresses the issue of outreach challenges raised above. Poor turnout for workshops and other events most likely are not a result of a lack of interest in Extension's educational resources, as some have suggested. Rather, attendance rates may reflect comprehension problems caused by low English literacy, or conflicts related to work schedules. Extension should continue to experiment with new educational models to find effective ways to communicate the information that Hmong users deem useful.

One of the more significant findings of the survey questionnaires and interviews relates to preferred program content. Overall, Hmong users expressed more interest in programming relating to fertilizing and pest control, compared to Caucasian users. Narrative interviews confirmed this preference, with all three interviewees expressing the importance of fertilization to gardening success or acceptable production. At first glance, this finding may appear counterintuitive, when considered with responses to questions about reasons for garden plot use. That is, if Hmong are using community garden plots primarily for reasons that relate to culture over production, a lower level of interest in learning new agricultural practices might be expected. Hmong gardeners, clearly skilled in production of Asian foods using traditional methods, would intuitively prefer to maintain time-honored methods as a

means of maintaining ties to the past. Fertilizing, especially with purchased products, was not commonly practiced in Laos (Faderman and Xiong, 1998). According to the narrative interviews, pest control was not a significant concern to the typical Hmong farmer in Southeast Asia (see Appendix F).

Yet, Hmong users show significant interest in production-related topics. Eighty-one and seventy-nine percent of Hmong users indicate interest in classes on fertilizing and pest control, respectively. Hmong respondents also expressed a high level of interest in composting, defined in low-literacy English as "turning leaves and kitchen scraps into soil". These levels of interest clearly demonstrate that improving production is a concern for the majority of Hmong growers, regardless of their cultural-related reasons for plot use. Hmong growers recognize that nutrient and pest management are important aspects of successful food production in Wisconsin. Resistance to the adoption of techniques to improve soil fertility or control pests, following from long-standing cultural practices, appears to be unlikely. This finding is confirmed by narrative interviewee Mrs. Vang, and is discussed in the following section. Extension educators should seek appropriate models for information transfer to Hmong growers on these topics.

The topics chosen least frequently by Hmong respondents include food preservation (43%) and variety selection (45%). Lower levels of interest in these topics may reflect a desire to maintain traditional "foodways" as a means of preserving cultural identity (Story and Harris, 1989). Within the broader realm of agricultural production, the Hmong in general seem more interested in learning about and, presumably, adopting new practices. Yet, less than half of

the Hmong respondents expressed interest in variety selection, defined in low-literacy English as "choosing plants that grow well in Wisconsin." In comparison, all other production-related topics (season extension, fertilizing, pest control, and composting) were selected by well over half of the Hmong respondents, or between 68 and 81 percent. Given the Hmong growers' cultural motivations for garden plot use, this comparatively low interest in variety selection may indicate some level of resistance to the adoption of a practice that would involve the abandonment of traditional plant varieties.

Strong interest in produce marketing, or "how and where to sell produce in your area", represents a significant finding of this study. As more than two-thirds of Hmong respondents indicated they would attend educational events on marketing, Extension should commit resources to address this need. Instruction could include entrepreneurial training following the model established by Atlanta's Extension, which focuses on guiding its students through Georgia's support and regulatory structure for processing and marketing value-added agricultural products (Kaufman and Bailkey, 2000). In this realm, Extension will likely have a willing audience for leadership development training toward the organization of produce marketing cooperatives. USDA Rural Business-Cooperative Service has provided development assistance and education to Hmong farmers in California (see *Rural Cooperatives*, May 1998). In other locations, Hmong producer groups are exploring export markets for their vegetables, with assistance from the USDA's Foreign Agricultural Service (Bowles, 1997). The observation that the Hmong household in Southeast Asia represents the highest level of production (Cooper, 1994; Geddes, 1976) may be relevant to efforts to organize Hmong growers in the United States. And, as discussed above, clan leadership

cannot be ignored in helping Hmong growers to organize and develop leadership capacity for marketing ventures. More research should be conducted to determine any effects that clan structure and traditional household production patterns may have on organizations of Hmong producers in the United States.

Responses to questions relating to preferred time and location of delivery show that most Hmong would choose home delivery over garden or Extension locations. This contrasts with Caucasian users who are more willing to attend events at UW-Extension facilities. Both groups express an interest in garden-based programming, although Hmong interest is higher. Home delivery of programming on an individual, one-on-one basis will necessarily be more costly and time-consuming than group workshops or programs, unless audio-video, internet, or other technologies are utilized. As suggested by Chia Ly, a bilingual Hmong interpreter with the Green Bay School District and Urban Garden Educator for Brown County UW-Extension, most Hmong families have VCR's in their homes, although few have computers (Ly, 2001). Many movies in Hmong are available in local Asian grocery stores in the Green Bay area, further indicating the accessibility of this medium for the Hmong.

Video production is costly and time-consuming, although other, less costly options exist. For example, audiotapes of programs in the Hmong language may be combined with digital photos and recorded as slide shows on videocassettes (Finlay and Luciani, 2001). This may be the most cost-effective means of communicating information in horticulture or other program areas to Hmong audiences. Although web-based information in the Hmong

language is currently available (see www.ces.uwex.edu/ces/hmong) no research or evidence is available to indicate that the Internet is generally accessible to the typical Hmong family.

5.2 Gardener Narratives

Hmong community gardeners seem likely to take the advice of a trusted friend or relative when making choices of fertilizers. Information about food production within the Hmong community also seems to be commonly transmitted by word-of-mouth. Mr. and Mrs. Vang were advised by a relative to apply granulated sodium bicarbonate as a fertilizer, which was purchased at a feed store in the relatively distant town of Bonduel. They were given seeds by "neighbors and relatives close by" when they arrived in Green Bay. Similarly, Mrs. Yang had "heard people talking about" the need for pesticides and fertilizers in the United States, and indeed found that it was "very true" that these products were necessary to grow food to an acceptable standard. When she needed to find a source of seed, she "just asked around" in her neighborhood. Mrs. Thao learned from her sister-in-law that 10-10-10 helps plants "grow beautifully" and makes the fruit rich. These means of gathering information show the importance to the Hmong of seeking advice from within the community. Other Hmong relatives, neighbors, or friends seem to be the most trusted or reliable means of learning. As Mrs. Vang states, "Parents, and older people know, they're experienced, so each one helps each other and that's how they learn."

Instruction for Hmong gardeners who seek knowledge of non-traditional techniques may be best delivered through established channels of communication within the Hmong community

being served. This may require Extension educators to locate and gain support from influential members of that community. Educators could take a "train-the-trainer" approach, contacting and educating those individuals who would be likely to inform other community members about horticultural practices or other topics.

The narrative interviews reveal major differences in attitudes toward the community garden program in Green Bay, even among Hmong users. While Mrs. Thao is an avid market gardener who would like to expand her market gardening opportunities in Green Bay, Mrs. Yang uses a community garden in the city near her home as a place to find some peace of mind. Mrs. Yang states, "I just want to have a garden, and when the times are stressful, or depressing, just to get away and relax. Mr. and Mrs. Vang use a larger garden plot at the Marley Street community garden in Green Bay (50 ft x 100 ft), but the food they grow there is only for family use. They state that they would not sell their extra produce if they had access to more land. However, they acknowledge that gardening in Wisconsin is "a different experience" and emphasize the importance of learning how to grow in their new home. Given this diversity of interest within the small narrative interview sample, diverse interests and needs within the total population under study can be extrapolated. Instruction relating to food production, with special emphasis on Wisconsin's unique climate, soil conditions, and pest problems, will be relevant for some gardeners. Others will be more interested in learning about local opportunities and practices for produce marketing.

All respondents indicate that certain adaptations to Wisconsin's growing conditions are considered necessary. Far from resisting change to traditional technique, some gardeners

have embraced certain practices they consider to be characteristic of food production in their new home. The narrative interviews suggest that, for some Hmong growers, this means chemically-intensive gardening. The Vangs purchase commercial fertilizers, stating that "we have to because otherwise the plants don't grow." When asked to describe the differences between farming in their home country and in the United States, the Yangs discuss pesticides and fertilizers. Mrs. Yang says, "Having to use pesticides and fertilizer, that's different. Since I was here, I heard people talking about it, and it was very true that I had to use that stuff to cure it..." These statements further suggest that resistance to learning about these practices, which may arise from prior traditional practice, is unlikely. Indeed, instruction in some topics is strongly desired, according to Mrs. Vang: "We really want you to continue more of this kind of class [on fertilizing and pest control], so the community can learn more and more..." The topics of fertilizing and pest control, two of the three most frequently chosen topics for educational programs by Hmong gardeners, stand out as important areas for emphasis in instruction.

All three families express the desire for a larger garden plot. This desire emphasizes the importance of exploring cultural differences and preferences among garden plot users. While 600 square feet may be adequate for the typical Caucasian family, Hmong growers are used to cultivating much larger spaces. One family cultivated between 8 and 10 acres in Laos, and two of the families spoke of tending large gardens while they lived in the refugee camps of Thailand. These camp gardens are instructive in that they suggest that families used much larger spaces when given a choice. Based on their estimates, these gardens were between one-eighth and one-half acre in size. Community garden programs in the Northeast District

and elsewhere can accommodate this preference by helping Hmong families locate and develop larger parcels. For Mrs. Thao, who has used her gardening expertise to support her family in Thailand, assistance in finding and developing a small farm may be the best way to help her realize her potential.

This preference for large gardens is associated with the importance of sharing garden produce for the Hmong. Mrs. Thao states that "we give it away to community members, families, everyone, we share the food." Mr. and Mrs. Vang also emphasize the importance of sharing: "If there's nobody we can give away [the produce] to, then we feel bad." The cultural importance of sharing is a major motivation for involvement in the community garden program for Hmong users (see Figure 6). While this finding is also seen among gardeners of other ethnic backgrounds (Lackey 1998), the ability to share culturally-appropriate foods may be one of the most important benefits of the community garden experience for the Hmong. For the Hmong users, growing food to share may recreate a "traditional cultural trait" (Airriess, 1994), which significantly contributes to adjustment in the United States. As Mrs. Vang says,

> We're experienced in gardening and farming, and we don't just do it for our families. We do it so we can share. We have a lot of visitors, so we make sure we have enough food for everyone. That's always in our mission and our vision, throughout our experience. So that's why a lot of [Hmong] people have big gardens.

Again, assumptions about the appropriate size of a garden plot should be critically examined in light of this cultural "trait" regarding sharing. The smaller garden may be adequate for supplementing the food needs of one family, but for the Hmong, an interest in sharing with members of an extended family may require substantially more space. The clan structure, which continues to exert "great influence" on social organization of Hmong communities in

the United States, entails that the average family would have many relative with whom to share (McInnis, 1990; Pfaff, 1995). As such, educators working with Hmong growers should consider larger land parcels in peri-urban or even rural locations to meet this culturally-specific need. The strong demand from Hmong growers for 5000 square foot gardens at the Marley Street garden, located in a rural setting nearly ten miles from inner city Green Bay, substantiates this claim.

Mrs. Thao's statement about the importance of an objective garden manager echoes similar concerns expressed by Hmong gardeners in prior years. She feels that a Hmong manager would not be objective, taking more garden space for him- or herself, and giving less to others. This belief raises an issue to be addressed when attempting to develop leadership capacity for self-management with Hmong growers. As noted by other Extension professionals working with community gardens (Harrison and Brachman, 1984), self-management is an important skill that should developed among garden users. Programming for leadership development has largely been unsuccessful with this audience in the garden programs under study, showing less attendance by Hmong users than programs on food production. In the Northeast District, Hmong participation in gardener volunteer activities has been limited, and educators have had little success in recruiting Hmong gardeners for service on advisory boards that help direct garden development. Mrs. Thao's statement implies that a preference for non-Hmong management may be related to these difficulties. Her opinion emphasizes the importance of exploring inter- and intra-clan relationships, and how they might effect garden management structure and sustainability, as well as the entrepreneurial ventures these gardens may make possible.

CONCLUSION

6.1 Summary of Findings

This study addresses cultural differences in use of Extension-sponsored community gardens in Wisconsin's Northeast District. The various areas of inquiry are interrelated, combining patterns of garden plot use and preference, as reported by Hmong and Caucasian gardeners, with broader issues relating to culture and learning. This interdisciplinary inquiry is essential for exploring the broad question of the viability of the community garden as an educational model, as it has been employed by an institution with distinct philosophy and values. With little precedence in the literature, this study represents an effort to explore topics of outreach to Hmong audiences through garden-based programming which have heretofore been overlooked.

The study shows that Hmong and Caucasian program participants differ in age, gender, and ability to speak and read English. The two groups garden in different ways, revealing varied levels of adoption of typical gardening practices. They reap different benefits from their participation, and cite different reasons for participating in the garden programs. Some differences in preferred means, location, and time of information delivery are noteworthy. These differences emphasize the importance of specialized program development to meet varied needs: what works with Caucasian gardeners may not necessarily work with Hmong gardeners, and vice versa.

High rates of chemical fertilizer and pest control use by Hmong gardeners not only suggest an area of future educational emphasis for Extension professionals, but also raise a number of related issues of learning style and decision-making within the Hmong communities of northeastern Wisconsin and elsewhere. In general, Hmong respondents practice chemically-intensive pest management in the community gardens: 78 percent use store-bought pest controls. And, while only 40 percent of respondents report using fertilizer, a full 94 percent of those who fertilize use chemical products. Indeed, the narratives recorded here would suggest that many Hmong perceive chemicals to be an essential ingredient for successful food production in Wisconsin. How has this perception been formed, and why is it so nearly uniform among gardeners of Hmong heritage?

While this question cannot be fully addressed here, some hints may be drawn from both the survey and narrative interviews presented in this study. Hmong respondents in Outagamie County answered the survey questionnaire in a small-group setting, through what appeared to be a consensus process. Were instructions intentionally disregarded in favor of a more culturally acceptable group setting? Repeated reference in the narrative interviews to reliance on word-of-mouth for information transfer within the Hmong community further emphasizes this apparent preference for group decision-making. As Mrs. Vang states, "Parents, and older people know, they're experienced, so each one helps each other and that's how they learn." Both decision-making and learning seem to be strongly influenced by collective and interpersonal, intercultural communication. Mrs. Thao states that "My sister-in-law in Madison used fertilizer and it makes the plant grow beautifully, it makes the fruits get really rich." This learning style may hold the key to effective instruction in Integrated

Pest Management or nutrient management, which seeks to optimize production while minimizing chemical use. A reliance on collective decision-making points to the importance of providing instruction to Hmong elders and other influential members of the community. While these individuals may be difficult to identify and reach, their adoption of recommended practices may have a "multiplier effect" within the Hmong community, as others follow their lead.

Analysis of the reasons given for garden plot use addresses the question of disproportionate use of garden plots by Hmong growers. The Hmong are new to the United States, and so differ from their Caucasian neighbors in that they must combine two lives, with different norms and traditions, in order to survive. As a major occupation and means of livelihood in Southeast Asia, gardening remains a central aspect of that former life that can bridge the psychological gap with their new one. Through gardening the Hmong can, as Airriess writes (1994), recreate "traditional cultural traits" of food production, as well as a host of traditional "foodways" associated with preservation, preparation, and sharing. For Hmong and other refugees from an agrarian background, the garden represents a "community of friends to share...experiences and cultural heritage" (Dotter in Relf, 1994). Benefits such as these may be difficult for Extension educators to measure and report, but they should not be overlooked. Hmong respondents in this study identified reasons relating to tradition, culture, and family cohesiveness as the most important factors in their involvement in community gardening. Even among an ethnic group that so uniformly suffers from a lack of food (Kok, et.al., 1998), these cultural and traditional values most powerfully motivate their decisions to use

community garden plots. In this light, their disproportionate use of garden plots needs no further explanation.

Yet, this strong orientation toward the cultural or traditional aspects of gardening raises the issue of potential resistance to educational programs provided by Extension through the community gardens. Educators strive to establish trust with their clientele; programs that present information as a challenge to the Hmong gardeners' traditional practice will not inspire this trust. Both the survey questionnaire data and the narrative interviews, however, provide evidence that resistance to learning in at least some topic areas does not exist. Although care is warranted on the part of the educator in choosing some program topics and means, time, and location of delivery, Hmong community gardeners clearly want more instruction in food production in Northeast Wisconsin. This includes pest and soil nutrient management, composting, and techniques to extend the growing season. Both questionnaire data and the interviews also point to produce marketing as a topic for further programming.

Finally, this study explores the broad issue of the appropriateness of community gardening as an Extension-supported program. In a time of limited availability of funding for new program development, administrators have scrutinized the community garden model as it has been utilized in the Northeast District. Some have referred to garden development and management activities as a "service" that UW-Extension, as an educational institution, should not provide. Careful response to these concerns may well influence the continued support of community gardening programs by UW-Extension.

As has been shown, community gardeners of Hmong and Caucasian heritage in the District reveal a strong interest in programs that have commonly been offered in association with plot rental. Only one-fifth to one-fourth of all respondents stated that they were not interested in attending gardening-related educational events; the rest identified a variety of topic areas of interest. Even Hmong gardeners, who use their plots largely to maintain a cultural heritage—or as Lackey writes, a "horticultural heritage"—express strong interest in instruction relating to food production and sale. For both Hmong and Caucasian gardeners, to "learn more about gardening" is a significant reason for their involvement. Obviously, lack of an audience is not an issue in this question.

Community gardening programs have been developed across the country with assistance from Extension. The development of these programs has been described as an "educational process" by one Extension professional (Patel, 1991). Data gathered from community gardeners in Wisconsin's Northeast District supports this notion: nearly half of all survey respondents learned something new from fellow gardeners alone. Instruction in a classroom setting, through demonstrations within the gardens, and by way of newsletters and bulletins are other routes through which Extension has provided research-based information to program participants in the Northeast District.

This instruction need not be restricted to horticultural topics: Patel suggests, and many others have shown, that the community garden is a viable model for youth development and nutrition education as well. Other researchers have called community gardening an "empowering component of a nutrition intervention strategy" (Blair et. al, 1991) and a

"superb community development tool" (Dotter in Relf, 1994). Indeed, Extension's involvement in community gardening throughout recent history, as reviewed above (Jobb, 1979), would seem to suggest that Extension's involvement in community gardening in Wisconsin's Northeast District is nothing more than business as usual.

6.2 A Word About the Future

Data gathered in this study has already proven useful, having guided educational program content and method of during the 2001 gardening season. Some of the most successful programs for Hmong gardeners were conducted during this year, and emphasized priority topic as identified by the respondents, including nutrient management and Integrated Pest Management. Classes were well-attended by Hmong gardeners, and oral evaluations indicated that most attendees intended to make use of information presented. In addition, data from this study was included in a funding proposal submitted by Brown County UW-Extension to the USDA Community Food Security Grant Program. The proposed project addressed needs identified in this study, including access to larger parcels of land for Hmong growers in the Green Bay area, as well as instruction in food-based business development. The three-year proposed project was awarded funding in September 2001, and will expand food production opportunities for Hmong growers in Green Bay beginning in early 2002.

Ideally, Extension educators working with Hmong growers in Wisconsin and elsewhere will continue to explore issues relating to educational outreach identified in this study. While this

study concentrated on issues relating to information transfer from Extension to Hmong producers, future inquiry might also explore the value of two-way learning. For example, are Hmong community gardeners impacting the practices of non-Hmong program participants? If not, is there potential for developing more two-way learning through community gardening programs? In learning more about such cross-cultural exchange, educators could become more effective in facilitating it through program activities.

As Extension professionals continue to address a need for food-based business development assistance and education with Hmong clientele, the questions surrounding learning and decision-making within Hmong communities become more acute. Clan membership or other group affiliation may influence the type of business model that will be preferred by aspiring entrepreneurs. Further, educators could explore the patterns of produce sale within the Hmong community. Are Hmong growers selling mainly to Hmong consumers, restaurants, or grocery stores? Are they growing and selling mainly traditional fruit and vegetable varieties? Is there knowledge of, or interest in, organic production? In helping Hmong growers expand the markets for their produce, Extension could help them explore consumers' perceptions of what they grow, and how they grow it.

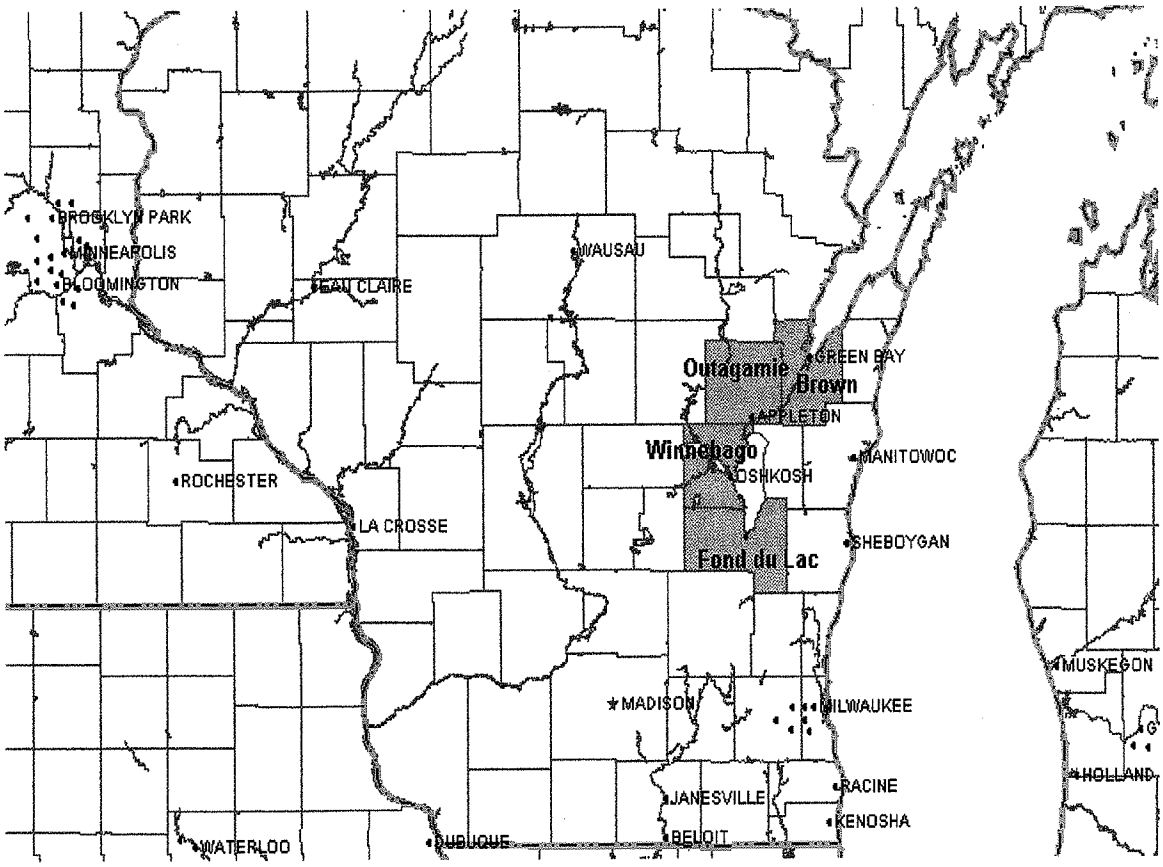
The data collected in this study required the use of bilingual Hmong interpreters. Effective transfer of information to Hmong garden users has only been possible with interpreting assistance. Clearly, bilingual partners are an essential piece of the programming puzzle in the Northeast District's community garden programs. Although contracting with interpreters for specific events may be one option for community garden programs serving Hmong

producers, these programs' goals would be better met by hiring staff with bilingual skills and the ability to learn and teach program content. This need for a more diverse teaching staff is echoed throughout Extension, as the institution strives to remain relevant amidst rapidly changing population demographics, especially in urban areas. One Extension professional writes:

> For quality educational programs, the cultural diversity of our faculty must more closely approximate the diversity of our students. Educational diversity of disciplines and of backgrounds must also improve. ...Extension must push for a more diverse organization by recruiting, training, and honoring diversity (Jones, 1992).

Many of the difficulties surrounding efficient and effective outreach to Hmong clientele could be resolved if Hmong garden educators can be recruited and retained.

Appendix A. Wisconsin Counties Participating in University of Wisconsin-Extension "Urban Initiative" Project.



Appendix B Urban Initiative Goals and Objectives.

Goal 1: Form, Build and Strengthen Partnerships

Objective 1: Gain a better understanding of the communities in which we program.
Objective 2: Explore what existing groups are currently doing to address urban issues.
Objective 3: Serve as a catalyst for convening agencies, groups and organizations addressing urban issues.
Objective 4: Partner with appropriate groups to address urban issues within the educational mission of UW-Extension with special consideration for diverse and/or under-served audiences.

Goal 2: Increase Awareness and Understanding of CES Outreach in Urban Programming

Objective 1: Identify and initiate contacts with key community and regional decision-makers.
Objective 2: Maintain regular contacts with key community and regional decision-makers.
Objective 3: Develop strategies to share urban program successes.

Goal 3: Deliver Quality Education

Objective 1: Involve clientele/partners in identifying urban audience needs.
Objective 2: Incorporate relevant trend data into selected program planning to address priority needs.
Objective 3: Secure long-range local and regional resources that reflect program priorities.
Objective 4: Involve all program areas in urban programming.
Objective 5: Measure program impact and modify our approach when necessary.

Appendix C Preliminary Survey Questions.

Questions about gardening, formulated by Ms. Kristine Clothier's clients (40+ Hmong families) who participated in the "Family Literacy" program at Fox Valley Technical College in Appleton, Wisconsin, to be addressed in workshops provided by UW-Extension's Urban Garden Coordinator, Outagamie County, September 27, 1999.

What are good fertilizers to help make the vegetables grow bigger and better?

How do you kill the weeds without harming the vegetable?

How do you kill the insects/slugs without harming the vegetable?

How long after you apply some type of insect or weed control before you can eat the plant? Does it affect the plant/vegetable?

How do you test the soil if we re-use the same plot?

What plants can we grow in a pot at home or in the yard?

What is good soil to use in potted plants?

[Program participants also requested that the educator bring samples of fertilizer, and insect and weed control products; they also requested information on cost and location to purchase these items.]

Appendix D Final Interview Questionnaire.

DEMOGRAPHICS

1 How long have you lived at your current residence?

2 Do you speak English?

3 Do you read English?

4 Do you read Hmong?

5 How old are you?

6 Where were you born?

7 When did you leave your country of birth?

8 Did you farm in your country of birth?

9 How many years did you farm?

10 Who taught you how to farm?

11 What were three main crops you grew?

HORTICULTURAL PRACTICES

1 Do you use bug killers in your garden that you buy at a store? (If no, go to question 2).

If yes: What specific products do you use? (Name one or two).

Do you understand the information printed on the label?

Do you read the label to make sure the product is effective in killing your problem bugs?

2 Do you use fertilizer in your community garden plot? (If no, then go to question 3).

If yes: What do you use for fertilizer? *Check all that apply.*
___Commercial/chemical ___Manure ___Compost ___Other:

When do you put fertilizer in your plot?

3 Do you plan to rotate your crops; for example, next year plant peas where you grew corn?

4 Do you plant to save seeds from your garden to use next year? (If no, go to question 5).

If yes: Do you grow "traditional" plants (plants that you grew in country of birth)?

Name three "traditional" plants that you grow in your garden plot.

5 Do you purchase seeds or plants from stores or catalogs?

6 Do you grow certain plants together in the same place? Name two you grow together:

BENEFITS DERIVED FROM PROGRAM PARTICIPATION

1 How often do you or your family members eat food that you grow in your garden plot during the summer? *Choose one.* Once a week, 2-3 times a week, 4-5 times a week, every day, or several times a day?

2 Do you preserve food grown in your garden plot for use at a later time?

3 How much time do you spend working in your garden plot in a typical week during the summer?

4 Does anyone work with you in your garden plot? If yes, who? *Choose all that apply.*
___Spouse ___Child ___Friend ___Relative ___Other:

5 How do you get to your garden plot? How far do you have to travel? *Estimate miles.*

6 How much money do you spend altogether on seeds, plants, fertilizers, and other expenses for your garden plot per year? *Estimate dollars.*

7 Estimate how much money you save in a year by growing your own food in your garden plot:

8 In the past year, did you meet someone in your garden who you didn't know before?

9 Do you have any other land available to you for gardening, besides your garden plot?

10 Do you use food you grow in your garden plot to:
___prepare traditional meals?
___use in traditional ceremonies?

REASONS FOR PLOT USE

1 Why do you use a community garden plot? On the following scale, rate each response. (1="not at all"; 2= "a little bit"; 3="a fair amount"; 4="a great deal")

___ Learn more about gardening.
___ Grow food for myself and family
___ Grow food to give to relatives and friends (outside my home).
___ Grow traditional food that I can't get at the grocery store.
___ Grow food to sell or trade.
___ For fun; I enjoy gardening.
___ Spend time with my family and friends.
___ Maintain my family's farming traditions.
___ Exercise.
___ Express my culture.
___ Other reasons:

ASSESSMENT OF PROGRAM POLICIES AND EDUCATIONAL OFFERINGS

1 Where is your garden located? How big is your garden plot?

1 Is this a good size? *Choose one.*

___ The plot size is just right.
___ I'd prefer a larger plot.
___ The plot is too big: I don't use the whole plot.

3 If you could have any size garden, how big would it be? Dimensions in feet or estimate acres.

3 How do you feel about the cost of renting your garden plot? *Choose one.*

___ The cost is about right.
___ It is very expensive for me.
___ It is very inexpensive for me.

5 If we had to develop a new garden, how far would you be willing to travel?

6 Do you learn from other gardeners in your garden? Give an example of something you've learned about gardening from another gardener:

7 Would you be interested in attending free classes on any of the following topics? *Choose all that apply.*

___ Composting (turning leaves and kitchen scraps into fertilizer or soil).
___ Controlling bugs and diseases in your garden plot.
___ Fertilizing and managing your soil.
___ Selecting seeds and plant varieties that grow well in Wisconsin.
___ When to plant seeds and plants for the best harvest.
___ Canning, pickling, and freezing garden produce.
___ Growing in cold weather/ extending the growing season.
___ How and where to sell produce in your area.
___ Other topics:

8 How would you like to receive information about the topics you choose? *Choose all that apply.*

___ Fact sheets or bulletins.
___ Slide shows with pictures and a narrator.
___ One-on-one meetings with an instructor.
___ Newsletter mailed to my home address.
___ Other:

9 Where would you like to receive information on the topics you choose? *Choose all that apply*

___ In the garden.
___ At home.
___ At the UW-Extension building.
___ Other location:

Appendix E. Breakdown of Interview Respondents by County and Ethnic Group.

The number of interviews given in each county and from each of the two comparison groups was determined as follows. Starting with the total number of interviews given (130), the number of Hmong versus Non-Hmong total interviews was calculated based on the percentage (70%) of Hmong gardeners (215) out of the total across the four counties (305). Thus, 130 x 70% = 91. Hmong interviews therefore make up the majority of total interviews based on the weight quotient of 70%. Total Non-Hmong interviews are 130 -91 = 39. Within each county, the number of interviews given was also weighted based on the county number of Hmong and Non-Hmong gardeners as a percentage of the total Hmong and Non-Hmong gardeners in the four counties. Thus, Winnebago County, with 44 Hmong gardeners, was given a weight of .20 (44 / Total Hmong Gardeners (215)). This weight quotient was multiplied by the total number of Hmong gardener interviews (91) for a total of 19 Hmong gardener interviews given in Winnebago County. Number of Non-Hmong gardener interviews was calculated similarly: (29 / 90) x 39 = 12.56. The use of this weighting method to guide the selection of respondents across the counties and ethnic comparison groups lends strength to generalizations drawn from the data and applied to the greater population of community gardeners.

County	Total Gardeners	# Hmong	# Caucasian	Percent Hmong	Hmong Interviews	Caucasian Interviews
Winnebago	73	44	29	60	19	12
Fond du Lac	32	12	20	38	5	9
Outagamie	65	60	5	92	25	2
Brown	135	99	36	73	42	16
Totals	305	215	90	[70 % ave.]	91	39

Appendix F. Narrative interviews: questions and responses.

Interview 1: MRS. THAO

We came [to Green Bay] on June 26, 1994. We had moved from Laos to Thailand in 1979. There we lived in a camp, Ban Vinai. We lived in Ban Vinai from 1979 to 1992, then moved to another camp, Chiang Kham. Another temporary camp also. I do gardening in Ban Vinai every day, every year, to sell. I have a garden just as I have here, and I sell some every morning. *How big was this garden?* The size of the whole garden plot on 5th and Ashland [about 125 feet by 50 feet], and this I consider to be too small. To sell, you have to have a big plot, and my three garden plots are too small. What you section for me [in the community garden] is very small, not enough even for my seeds that I want to plant, and once everything is ready, its not enough even for a small family to eat. **The majority of the Hmong community are upset because their gardens are too small.**

Did you rent land in the camps for your garden? Nobody designated any area for us, its up to us if we like it. We don't do it on the mountain or dry area, we pick from valley area, close to water, a stream or pond, to water the vegetables. We didn't pay, we just used it.

In Thailand, for beans and other vegetables, we can garden up on dry land, its ok. For greens and lettuce, we have to garden close to water. But in [the United States] and in Laos it doesn't matter, we can do it anywhere.

Which vegetables have you grown in Asia and the United States? We plant green spinach, flower spinach with white stems and yellow flowers. Also Chinese cabbage. Another one like Chinese cabbage that opens up like lettuce. The white lettuce, we cannot sell them too long, we have to cut them only once. But for spinach, we can sell as many as we want because they keep on growing. Onions, cilantro, lettuce, [but] not so much tomatoes. Asians don't eat as much of tomatoes, but a lot of greens. I could have a full loaded cart full of vegetables to take to the market [in Thailand], it takes me about two hours only and everything is gone. The market is right in the camp, and most of the customers were other people living in the camp.

Would you grow here for market if you could? We want to have a market, we didn't have a chance to sell at a market [in the United States]. **I'm experienced in gardening a lot, and I love to do it, and if there were a place for me to sell my stuff, I would do more gardening than I do right now**.

Describe the process of farming in Laos: January is the time to go and mark the land. February is time to cut down everything. Because we were in the northern part of Laos, February is the time to cut down everything. We had big trees, and we had to use an axe to chop them down. Some trees were the size of this box (points to cardboard box, about 1 ½ feet on a side). We have to wait until everything dries up, and burn everything that we chop, starting in April. Between April and early May, we burned. Everything that was left not burned we have to chop into smaller pieces, and save it for burning wood, and clean up the

land. In the middle of May it is time to start planting crops. Everything is planted by the end of May. In the southern part of Laos, we can do it later, like in June. This is for the major crops, rice and corn.

For vegetable gardens we have to start in October. These we plant in a different area. Squash and cucumber goes with corn and rice. To get vegetables we have to start in October on. We start planting in October and get vegetables all the way to February. In Laos we plant opium to sell to get money, we plant opium and vegetables together, all in the same place. In Laos we plant vegetables with the opium plants scattered all over, we don't do it in portions like here. We have to pick lands to plant vegetables and opium on in Laos; it has to be black dirt, not yellow or any other color. Corn grows only on sandy black soil. We can't plant corn on yellow dirt.

Did you fertilize your crops in Laos? We use fertilizer a very small percent. Only if we're in the city do we have to use it, the same as we do here [in the United States]; but in my village we would burn the manure of animals. Where we plant rice, and corn, and squash...because it's too far from home, we have no way of doing that. But we save the ashes from the burning of the trees and shrubs, this is considered to be fertilizer. **In the camp we did not use any natural fertilizer, we had to buy chemical fertilizer, either liquid or powder like here, for the vegetables. We have to use these in Thailand. If we don't have chemical fertilizers, they didn't grow**.

Tell me about any pest problems you had in Laos or Thailand: We have a lot of insects in Thailand, lots of small worms, lots of little tiny bugs, aphids or mites. Once the vegetable has the aphids, the plant is going to die. That's why we use a lot of chemicals in Thailand. If it has worms on it, there's a chance the plants will live, but if the plants have aphids on them, there's a chance the whole garden will be gone. If worms or beetles are on the plants, it's easier to kill with chemicals. But if it has aphids or small, tiny bugs, it's very hard. Whoever has a garden with those bugs, there's a chance its going to die.

What are the main differences between gardening in your home country and in the United States? In Laos, when we start gardening or farming, we don't have to invest any money, other than our energy. Here, the day we start gardening is the day we spend money. That is a big difference, because we have to buy fertilizer here, have to buy pesticide to control insects, pay for garden plot. **Here it's just like business, and when you have a business, you have to invest some money**. In Laos with gardening we don't have to invest anything other than our energy. And, when the produce is ready, you can sell some and get some money. **So that's why a lot of elders are very stressed, and don't want to live here,** because it's not the same as in Laos.

How would you compare the quality of harvest in the two countries? For vegetables, its ok here, they produce similarly, they grow the same. But rice does not grow here. Squash and cucumber grows the same. Based on my experience, what we did in Laos is much different than here [concerning gardening or farming]. In this country, having a garden we have to have fertilizer help in order for the food to grow. In Laos we don't because there is manure

all over from the animals that we raised. For example if you live up on a hill, and your house is way up on top, and your garden is at the bottom or the lower hill, everything will wash down and deposit where your garden is. You don't really have to fertilize there.

In Laos, we put fertilizer—cow or chicken manure—on the dirt and mix[ed it] before they even start to till it. Here, we put it on after everything is planted, and that's something new to me. I believe that its not as active, it should be mixed with the dirt before everything's planted.

The Laotians did [farming or gardening] different...similar to what we do here.

Where do you currently get your seed? **I get all my seeds from other Hmong people. In the Hmong community we don't sell seeds but we give them away**. So if I see you have some cucumbers I like, I'll say "can you save me some seed?" and they'll save me some seed, and I'll just spread them all over. The cucumbers we plant are huge and have yellow inside. Even if it's big, it's still soft, and still tastes good. But in this country, [a big cucumber] doesn't taste good like that, so a lot of Asians don't like it. We like the large cucumber, but we don't like pickles. Once they get this big [points to her wrist] it's too big, it's sour. The majority of plants in Laos also grow here, but not the rice plant, the season's too short. Rice needs five to six months.

The biggest difference here is that we use a lot more fertilizer here than we do in Laos.

In Laos we don't have to pick lands much. As long as the soil is black, then most vegetables will grow beautifully. And they even grow way up on top of the mountain. I started farming with my mom when I was about 7 or 8 years old, starting the vegetable fields with the opium plants up on the mountains. My mom shows me how to do it. We'd get water from the cool areas in the caves. I spent most of my life up in the mountains, and we did a lot of farming on top of the mountains and the hills. Then we moved to the city. I did not get as much experience as I could with gardening in the city area, other than moving into Thailand and gardening in the camp. We were hiding out in the jungle for 4 or 5 years, just planting rice fields, before we moved to Thailand.

How do you feel about your community garden plot? **The garden plot is too small**. At the minimum size, the 5th and Ashland garden should be for just two gardeners. But the best would be if it was just for one gardener. That's what I recommend.

I did another plot on the west side by Hwy 54. We have two acres for four families by 54, but this year the tractor was broken so the owner could not till the paddy for us. *Did you rent that land?* No, the farmer just donates to them. *How did you get to know the farmer?* At Paul's Pantry [a local food pantry], he announced to the people, "who wants to do gardening?"

How are the community gardens organized in regard to the clan structure? There's no problem, everyone can work together, it has nothing to do with the clans. When you're finished tilling, section them out equally, with the people's name on it. **It has to be someone**

like you to do the sectioning, don't let a Hmong person do it. If the gardeners do it themselves, it will never work, because they will always want it to be bigger for themselves, and smaller for others.

Tell me about preserving food from your garden plot: We make sour vegetables, sour spinach. Also salty spinach. We put boiled rice juice in the greens. Just wash the spinach and drain, put in the bucket with a little warm water. To be salty, we put a little salt in here. For the sour kind you need to boil the greens, but not the salty kind.

In Laos, we don't eat a lot of meat, it's hard to get meat, so we eat a lot of vegetables. We eat a lot of vegetables with rice.

My husband does the gardening most of the time, and once the produce is ready we give it away to community members, families, everyone, we share the food. I think the community garden is very important to me. The program helps me till the land, section it out, and what I really want is a market, a place to sell my stuff. I mostly plant spinach, cilantro, onions; there's nothing I don't like about the community garden except that it's too small. My sister got a plot from Maple and Augusta before, but it's too small, that's why we didn't stay there.

I cannot find 10-10-10 fertilizer, where do I get it? My sister in law in Madison used fertilizer and it makes the plant grow beautifully, it makes the fruits get really rich.

Interview 2: MR. AND MRS. YANG

We came to the United States in December of 1993, directly to Green Bay from Thailand. We went from Laos to the [Thai refugee] camp, and lived there for 12 years. We did not plan to come to the U.S., we planned to go back to Laos and live there but somehow things didn't work out so we decided to come to the US.

Did you garden in the refugee camp? **We had a garden in the camp, but it was much bigger**. It was about the size of Maple and Augusta, the whole plot [about 100 ft by 200 ft]. That's considered the minimum size. We did not have to pay, and we did not have to use fertilizer.

Tell me about your farming experiences in Laos. **We had a very big farm in Laos, between 8 to 10 acres**; we had to plant 5-6 bushels of seeds to fill the whole area. That was just the rice field, the corn field was separate. The corn field was almost as large, we used about two bushels of corn to plant it.

Tell me about the vegetables you grew. Rice and corn fields are further from home, the vegetable gardens are closer to home. This garden is as big as Maple and Augusta. Here we planted hot pepper, cabbage, green spinach, squash. We eat the flower and the vine head of the squash. You peel the skin off, and eat it plain or boil it with a little meat. Or you could stir-fry it and eat it with squirrel meat, the number one food. Very good.

Did you use fertilizer in Laos? We never use fertilizer in Laos at all; even though we don't use it, the corn and rice are very good, they grow very tall, and when the wind blows, everything falls down. So when I have to go and get the rice, I have to pick it up and chop it off.

What about the vegetable gardens, did you use fertilizer there? No, we never use it, just sprinkle the seeds all around, mix it with the dirt. The vegetables grow very big. We stay in one place for 4-5 years, then move to a different plot, and leave the old plot to become forest or jungle, and later on come back and use it.

Did you ever use manure from your livestock as a fertilizer? We used cow manure for the vegetable garden close to the house. If we use it, we pick it up, dry it, burn it, and use the ash. We put the ash around the roots of the tomatoes. *Describe how you burned manure.* We go to where the cows are, put all the manure in a pile, and start it on fire, then just use the ash.

Where we lived there was not much marketing, so the majority of vegetables and rice we raise for the family, the corn for the animals. We had cows, horse, chickens, pigs. If community people want to buy animals, they would sell them. In the camp we just gardened for the family. The garden at Maple and Augusta was about the size for the family.

In Laos we started to cut trees in Jan after the New Year celebration, we cut down trees and jungle. By April, we started burning everything we cut down. And between April and May we burned and cleanup the land. By the end of May, we planted everything. After we planted we weeded it 1-3 times. By late September the corn is ready to be picked up, by the end of November, the rice. We would start vegetables and sugar cane at the same time that we start planting corn. By December sugar cane is already ready.

Did you experience pest problems in Laos? In Laos, we didn't experience much bugs at all. In Thailand, we had green worms, like inch worms. We saw them for a while, but they disappeared. We didn't use any pesticides.

What's the biggest difference with gardening here in the U.S.? The biggest difference is that **the garden plot is too small**. That's a major problem. And, we have to pay each year. Also, **there are bugs—insects—that I never experienced. Having to use pesticides and fertilizer, that's different**. Since I was here, **I heard people talking about it, and it was very true that I had to use that stuff to cure it, that was very different.**

Where do you get your seeds that you use in the community garden? I was not able to get any seeds from my homeland country. When I came here I just asked around in my neighborhood, and people just got it from an American store. And, I got some seeds from other people.

How do you feel about the community garden program? The community garden is very good, I don't have any complaint, except that it is too small. I would rather have two sites. I have a disability and can't travel further, so I like to have the garden in the downtown area.

I don't plan for any marketing. **I just want to have a garden, and when the times are stressful, or depressing, just to get away and relax**. I'm too old now and can't garden that much.

Do you get along well with the other gardeners? Yes, no problems.

Do you preserve food from your community garden plot? Sometimes.

Who does the gardening in your family? We both work about the same amount of time, and Mr. Vang does not drive so I drive, so sometimes I just take off without telling anyone.

How can Extension help your family? Financially we are in major trouble. Right now Mr. Yang cannot work, and he does not qualify for any disability. Mrs. Yang is the only one who can work.

Mr. Yang was a soldier for a long time, and was carrying a lot of stuff, and the pressure from all the explosions, so he has arthritis now, and won't be doing a big garden. And Mrs. Yang has a back problem so she can't work longer periods in the garden.

Interview 3: MR. AND MRS. VANG

My experience with gardening is different in this country than what I remember in my country.

When did you arrive in the U.S.? March 31 1992, we came directly to Green Bay, we didn't live anywhere else. *Did you come from a camp in Thailand?* Yes, Ban Vinai to Phanam Nikhoum to the U.S. We lived in Long Chien, in the northern part of Laos. It was quite a big city for the Hmong. It's where the U.S. CIA landed. This was our original home.

Tell me about the farming you did in Laos and Thailand. We had a farm in Laos. **Back in Laos, we did not have to use any fertilizers to help us out.** Basically, we just chopped down the trees, everything in the jungle, let it dry, burn everything, and the ash from the wood of the trees we cut down we used that for fertilizer on the land, and that's all we used.

How long could you use a piece of land? We only used the land for two years; then we had to move to another piece of land. And we saved the original land to grow trees or plants until the land is good to use again, and we would come back.

What would happen if you use a piece of land for more than two years? We never used any land for three years, only two years. In Laos we never had to buy land, and no land belongs to anyone, so we can pick anywhere we want, and here... it seems like land is already owned by someone, each year we have to pay. If we want to plant in one area for more than two

years, we're going to have to plant more than just rice, for example like squash, lots of other variety crops, so we can chop those down and burn to be ash on the land. If we know we're going to plant an area for more than two years, we would do that.

Did you have to travel to your farm? When Long Chieng first started as a city, we did farm close to the city, which is not too far, but after a while, lots of people move in, then we don't have enough land and we have to travel quite a distance to do the farm.

Did you garden or farm in Thailand? No, we were stopped by the camp authorities. We were in a camp, there were fences all over; but we did have a donation from the Thai and U.S. government, so we depend on that food. We did not have any gardens. Life in the camp is not easy; it is very, very strict. The authorities did not let them get out. If someone broke the rules, they would get put in jail or even get killed.

Did you use manure for fertilizing in Laos? No, we never used anything like that. We never use any manure of any animals, just used whatever the land was. In Laos, green spinach was very good, it was very big. One plant could fill a whole bushel. This is the same spinach we grow here but there it was bigger, very big leaves.

How did you choose good soil for planting in Laos? We chose black, or yellow soil; thick and sticky soil. Red soil also. These are good for vegetable crops. Any soils that are pretty loose or dry are not good. **Parents, and older people know, they're experienced, so each one helps each other and that's how they learn.**

Did you experience bugs or disease problems with your plants in Laos? No, we had no experience with any kind of bugs. One year, before the communists took over, there were a lot of grasshoppers. They landed on the rice fields and ate all the rice grains. They sent out the message and the government sent in some pest control, and we put it on. We put the powder on, and all the grasshoppers died.

Do you grow the same plants grow in US as in Laos? We brought some seed, but when we landed in San Francisco it was taken by the U.S. government. They did not allow us to take any seed in. So we did not get any seeds from our homeland. **And when we arrived in town, we asked our neighbors and relatives close by who started gardening before, they saved seed, and they just gave it to us. The seeds that we have are similar to the ones in Laos.**

Where do you garden here in Green Bay? We garden at the Marley Street garden, [50ft x 100ft plot]. This is our first year. *Do you like that garden?* It's ok, but we don't like the location near the neighbors along Marley Street. It's way too far from the road. **We were not able to communicate with the neighbors, but I got the feeling that they did not like Asians at all.**

Is your garden big enough? Just for the family, the big plot is ok for us. *Would you grow more to sell at a market?* No.

What types of traditional foods do you eat from your garden? We eat the head of the squash vine and the blossom, and also the squash. We love the head of the vine; we peel off the hairy part and cook it. Also peas, green spinach, pepper, anything that vines, we chop off the head to eat. The squash must be from Laos, they look like the ones we had in Laos. When we plant we're not only eating the squash, but the head, the blossom, and the squash. We'd like to invite you to pick some, anytime you can.

In the Hmong culture, we work hard in the garden. **If there's nobody we can give away [the produce] to, then we feel bad. If we have someone close by like you that we give you some sharing, we love doing that.**

Do you use fertilizer in your community garden? **We use fertilizer; we have to because otherwise the plants don't grow**. [Brings out 40 lb. bag of sodium bicarbonate, feed grade, from Arm and Hammer.] This helps the plants. We get it from Bonduel, a fertilizer store. We couldn't find this in Green Bay. We only use this in the last years when we were here.

How did you decide to use sodium bicarbonate? **We have a relative that lived in Green Bay; he's passed away right now. He used this, and that's where I saw it**. That's who directed me there, to Bonduel.

Have you ever done a soil test? No, never did one. **Based on my experience, when it rains, I don't put as much fertilizer on. I put it on when it's pretty dry and there's no rain. It helps the plants to grow. I just sprinkle it all over on the dirt, and mix with the dirt.**

Do you preserve food from your garden plot? Yes, we freeze some food. *Do you do any canning?* No, only freezing.

What kinds of bug problems have you had in the community garden, and what do you do about it? We've had ladybugs with spots, yellow, they can fly. We use a chemical to kill

them; we sprinkle the powder on the plants. We use these bug controls but only when the plants are small. When they're big, we don't use them anymore. *Why only when they're small?* When it grows there's no more bugs. *Do you put it on before you see the bugs, or after they appear?* We're not putting it on until we see the bugs. [brings out bag of Bug-be-Gone]

[Interviewer mentions some safety procedures when using insecticides.]

Other people use another kind of fertilizer, its very stinky. They mix it with water and put it on the plant. We did not use this.

Mr. Vang does more of the gardening. Mrs. Vang has something wrong with her leg, so Mr. Vang does more. Children don't know how to do gardening; they just go running around the garden.

Why, in your opinion, do so many Hmong use the community gardens? How do you feel in the garden? Hmong people always worry about their food, and their needs, and that's why more [Hmong] are doing that. More and more garden, and that's what they're experienced in, and they love doing it. **We're experienced in gardening and farming, and we don't just do it for our families. We do it so we can share. We have a lot of visitors, so we make sure we have enough food for everyone. That's always in our mission and our vision, throughout our experience.** So that's why a lot of people have big gardens; they don't just do it for the family, we do it for everyone. And when we have good things to offer

for others, we feel good, we're very happy. And we feel like that's how a family should be, we should be able to share with others.

My job is to be an educator, and not just a garden coordinator. What can I do to teach gardening; what are the topics that you would like to hear about? Thank you very much for your assistance. **It's important that we should learn how to grow in Wisconsin, and it's a different experience**. We're not sure how you should continue to educate the community, but what you have done for the first time helps us a lot already. We really want you to continue more of this kind of class [on fertilizing and pest control], so the community can learn more and more, and you can help them to control bugs and plants. You can also help us to find manure for fertilizing the gardens.

What's the biggest difference with gardening here, besides the fertilizer? How can we teach without teaching what you already know? The biggest difference is that we have pay for the plots. Also the fertilizer, we never had to use that back there. If we would be able to go back to Laos, we'd love to take you back there, and show you how we farmed. Because we didn't use any chemicals for the plants; and the majority of the time we did not know the different disease or illness in our experience. Children never get really sick as they do now in the United States. A lot of old people are pretty healthy. We believe its because the vegetables and plants, they're very healthy. That's how we believe.

How about the quality of vegetables you buy in a store, are they ok or not so good? They're ok, but compared to Laos, not so good. In Laos, they're much bigger and better. Plants in

the garden, and the food they hunt, it generally tastes much better. We believe that the land in Laos is pretty rich, so it's pretty good soil for farming or gardening.

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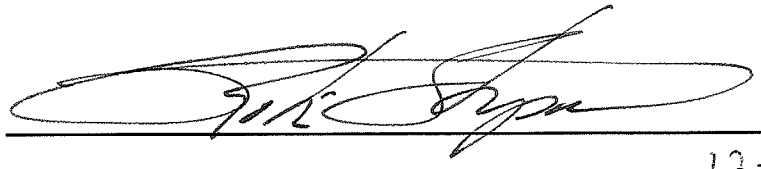

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