

Grow & Eat Fresh in LA

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Stated Goals/Objectives:

Goal #1: Improve diet and health of participants:

- After repeated exposures to a variety of fresh vegetables, participants will increase their preference for vegetables by 50%
- After four weeks of gardening and nutrition instruction, participants will increase the number of cups of vegetables they consume on a daily basis by 20%
- After four weeks of instruction, 70% of participants who did not have a garden at the beginning of the project will plan to start their own vegetable gardens at home or at a community garden

Goal #2: Help low-income families save money on food:

- 50% of participants, who start a garden as a result of the program and complete a 3-month follow-up survey, will report savings on grocery purchases

Goal #3: Build participants' confidence to grow their own food at home & increase neighborhood cohesion and sense of community among participants:

- 70% of participants will report an improvement in gardening knowledge after four weeks of instruction
- Over 50% of the class participants will continue to meet after the classes for additional gardening and nutrition instruction and peer support

Project Summary:

UC Cooperative Extension received **\$10,000** from the UC Agriculture Sustainability Institute (ASI)-Sustainable Agriculture Research and Education Program (SAREP) to support the *Grow & Eat Fresh in LA* project. The project consisted of a 4-week gardening series combined with nutrition lessons and cooking demonstrations conducted within low-income community gardens in Los Angeles County. People who signed up for the classes learned about growing their own foods at home or in a community garden, the nutritional value of home-grown produce, and how to prepare the produce using simple, nutritious recipes. The purpose of this project was to determine whether garden and nutrition instruction delivered simultaneously could provide low-income families with the necessary skills and knowledge to create productive home gardens, which would result in improved diet quality and money saved on food.

The project was delivered within the community by trained UC Master Gardener volunteers. The volunteers were trained by the Nutrition, Family & Consumer Sciences Advisor in Los Angeles County to deliver the *Fresh from the Garden* lessons alongside the 4-week *Grow LA Victory Garden* series. The Master Gardeners were trained on the gardening aspects of the program by the Master Gardener Program Coordinator and Los Angeles County Cooperative Extension Sustainable Food Systems Advisor.

US census tract data were used to identify low-income community gardens located in neighborhoods where more than 50% of the population lives under 185% of the federal poverty level. Participants voluntarily signed-up for the 4-week gardening series, and it was up to them whether they attended all four classes. The participants were given a questionnaire at the beginning to determine their level of knowledge and practices as it related to gardening, cooking and dietary habits. At the end of the 4-week series, the Master Gardeners administered a post-questionnaire to measure any changes in knowledge and/or behavior among participants. In order to further measure dietary changes among participants, Master Gardener volunteers conducted vegetable taste-tests followed by a short questionnaire to gauge participants' willingness to consume the vegetable again and to serve it to their families. In addition, participants who provided email addresses were sent a 3-5 month follow-up survey to complete on their own. The follow-up survey included questions on potential savings from home gardens and the continuation of gardening and learning among participants.

The combined gardening and nutrition education instruction encouraged program participants to make important changes in dietary behaviors. By the end of the 4-week series, the participants reported consuming more servings of fruits and vegetables and they were more confident in their skills to prepare and cook home-grown vegetables. There was not a great deal of savings on food reported by the participants who completed the follow-up survey, however, most reported modest savings of less than \$10 per month. Almost all participants who taste-tested the vegetables said they would try them again and they would serve them to their families. These are very promising findings that support further garden and nutrition intervention within low-income communities that are often affected by high rates of diet-related diseases.

Results:

A total of 120 participants took part in the 4-week gardening and nutrition workshops offered at seven low-income community gardens throughout Los Angeles. The garden sites were as follows:

- Milagro Allegro Community Garden, 115 S. Ave. 56, Huntington Park, CA 90042
- North Hollywood High School Garden, 11800 Weddington St. San Fernando Valley, CA 91607
- Billy Mitchell Elementary School Garden, 14429 Condon Ave. Lawndale, CA 90260
- Carmelitos Housing Development, “The Growing Experience” Community Garden, 750 Via Carmelitos, Long Beach, CA 90805
- Vermont Square Community Garden, 4712 S. Vermont Ave. Los Angeles, CA 90037
- Elm Avenue Community Garden, 334 West Ave. J-13, Lancaster, CA 93534
- Wrigley Community Garden, 1950 Henderson Ave. Long Beach, CA

The majority of program participants were between the ages of 18 and 59 (80%). Some participants brought their children to take part in the classes, therefore we had a small percent between the ages of 5 and 17 (10%). In addition, 10% were 60 or older.

The majority of participants were female (78%). We had a diverse group of individuals attending the classes: 7% were African American, 14% Asian, 2% were American Indian/Alaskan Native, 3% Native Hawaiian/Other Pacific Islander, 67% white and 2% reported multiple races. A third of participants reported that they were Hispanic/Latino. See *table 1* for additional demographic information.

Goal #1: Improving the diet and health of participants

Master Gardener volunteers were trained to incorporate *Fresh from the Garden* lessons into the *Grow LA Victory Garden Initiative*, a 4-week basic gardening series for the general public. *Fresh from the Garden* is a resource that was designed to increase gardeners' knowledge of healthful eating habits, while emphasizing the health benefits associated with a vegetable-rich diet. Each *Fresh from the Garden* lesson features preparation and tasting of a healthy fresh vegetable recipe. The lessons were recently updated with funding from the UC CalFresh Nutrition Education Program and piloted in 2010 by the LA County Cooperative Extension UC CalFresh Nutrition Education Program in collaboration with the Master Gardener Program. Results from the pilot project indicated that the classes positively impacted participants' willingness to consume more vegetables.

In order to determine whether the *Fresh from the Garden* lessons coupled with the *Grow LA Victory Garden* series helped improve participants' diets, a number of questions about fruit and

vegetable consumption were included in pre/post questionnaires. In addition, questions about cooking were included to gauge participants' knowledge and ability to actually prepare fresh-grown vegetables at home. Learning how to grow your own vegetables is an important first step, but knowing how to harvest, store, prepare and cook these vegetables is essential if home gardening is going to confer any benefits on diet and health.

The victory gardening classes definitely had a positive influence on participants' motivation to start their own vegetable garden. At the start of the classes, a little less than half reported having a vegetable garden; however, by the end, close to 75% said they currently had a vegetable garden. Many participants reported similar motivations to start a home garden. The responses were evenly distributed between several key factors, including fun/relaxation, saving money, eating a healthier diet and ensuring food is free of pesticides.

At the beginning of class and at the end, almost everyone reported eating a variety of fruits and vegetables and everyone agreed fruits and vegetables are an important part of the diet. This is not surprising, as we were surveying a group of people who voluntarily signed up to learn about vegetable gardening. However, the classes had a positive effect on the quantity of fruits and vegetables consumed among surveyed participants: the percentage of people eating 1-2 cups of fruits and vegetables decreased, while the percentage of people eating 3 or more cups increased by the end of the 4-week series (see *table II* for more details). These findings are supported by research, which has demonstrated that gardeners consume more fruits and vegetables than non-gardeners.^(1, 2)

The cooking component of the gardening series definitely increased participants' confidence that they knew how to prepare and cook vegetables grown in the garden. Even though the majority of participants considered themselves to have intermediate cooking skills, in the beginning, nearly 20% of participants reported they were unsure of preparing and cooking vegetables grow in the garden. However, by the end of the series, there was far less uncertainty among these participants. A higher degree of confidence was observed when nearly 90% said they could now prepare and cook home-grown vegetables (see *table II*). The cooking component of the series may have also encouraged this group of self-reported intermediate cooks to make better use of their cooking skills at home. By the end of the series, there were a higher percentage of participants who reported making 5 or more home-cooked meals throughout the week and far fewer who reported making 0-2 home-cooked meals per week. A small number of participants responded to the 3-month follow-up survey and almost everyone said they were able to prepare and cook vegetables grown in the garden. There was an even a greater percentage of respondents at follow-up (75% compared to 67%) who reported making 5 or more home-cooked meals per week (see *tables II and IV*).

These are all promising indicators that the nutrition and cooking component of the series encouraged participants to prepare and consequently consume a more vegetable-rich diet at home, thus enhancing their diet quality. There are many health benefits associated with a diet high in fruits and vegetables, including decreased risk for diseases such as heart disease, diabetes and certain types of cancer, as well as improved weight management. ⁽³⁻⁷⁾

The nutrition and cooking component of this series exposed participants to different types of produce, as well as new and interesting ways to healthfully prepare home-grown vegetables. One participant remarked in the post-questionnaire that it was very helpful to learn about the various fruits and vegetables that can be grown here in Los Angeles that she had never seen nor heard of before. Similar comments were heard from other participants who were excited about being able to taste-test these new foods. Throughout the series, participants were given the opportunity to taste-test a wide variety of vegetables, including beets, cabbage, Swiss chard, winter squash, cauliflower, kale, mixed greens, and root vegetables. After the taste-testing, the instructor asked the participants questions about their willingness to try the vegetable again and to serve it to their families. The taste-testing questions were developed by the UC CalFresh Nutrition Education Program to gauge participants' willingness to consume new fruits and vegetables. The vast majority of participants who taste-tested these vegetables responded positively to both questions (see *table III*). The fact that participants were willing to consume these vegetables outside of the class and to share them with their family is another indicator that the classes are likely to improve diet quality. The following quotes demonstrate some of the positive experiences of the participants:

"[One of the most helpful things I learned was] sampling of vegetables I had not tried before."

"The recipes were very helpful and they got my family trying new things."

"I didn't have any experience at all in vegetable gardening so the class provided a good foundation for me."

"For me, an absolute novice, it was a great introduction to gardening and all the work that it takes to create and maintain a garden."

Goal #2: Helping low-income families save money on food

The second objective of this program was to help low-income families save money on food. In order to gauge whether or not there was any savings on food, a follow-up survey was emailed to program participants within 3-5 months of their last garden class. Unfortunately, there was a very low response rate to this survey. From the 16 questionnaires that were completed, we

can make some observations about the longer-term effect of this series on our participants, however, further study is needed.

Among participants who responded to this survey, a high percentage said they currently have a vegetable garden (88%). This is similar to what was reported in the post-questionnaires. Nearly all of the participants said the garden classes greatly improved their knowledge of gardening.

There was a small degree of savings reported by these participants. Over one-third said they were spending a little less than usual, however, a little under one-third did not report any savings whatsoever. Overall, the vast majority of respondents (75%) reported a modest savings of less than \$10.

Home gardening has been reported to save families money on food. According to the National Gardening Association, a \$70 investment in gardening could yield an annual crop worth more than \$600 in vegetables.⁽⁸⁾ While there is evidence that gardening can save families money, in order to further investigate the potential savings incurred by our program participants, more participants will need to be surveyed in the future and alternate survey methods will need to be employed (i.e. telephone survey).

Additional savings may also be realized for low-income families who qualify for SNAP (formerly Food Stamps). SNAP participants can now purchase seeds with their SNAP benefits. With this knowledge, our Master Gardener volunteers can educate SNAP-recipients about their seed-purchasing power, and perhaps this will encourage more low-income families to invest in seeds for home gardening. This could lead to significant savings on food for these low-income families.

Goal #3: Build participants' confidence to grow their own food at home and increase neighborhood cohesion and sense of community

Another goal of this program was to build participants' confidence to grow their own food at home and to increase community cohesion and social involvement among participants. The data indicate the classes had a very positive effect on participants' confidence to grow their own food at home. The majority of participants reported having a garden by the end of the 4-week series, whereas less than half reported having a vegetable garden at the beginning of the series.

Research has shown that the social aspects of gardening can help foster relationships that are supportive of healthy behaviors and overall health.⁽⁹⁾ The structure of our victory garden classes had the potential to support social involvement and cohesion among participants. There is some indication that our participants continued taking gardening workshops after the 4-week series, and some continued to meet with their fellow classmates or instructors after the series.

However, not enough participants completed the follow-up survey to have a good enough indication of whether or not the classes impacted cohesion and social involvement among participants. Further research will need to be conducted in this area.

Potential Benefits/Impacts on Agriculture and/or Food Systems:

The Grow & Eat Fresh in LA project was conducted within low-income community gardens in Los Angeles. The project demonstrated a positive effect on participants' diets through garden, nutrition and cooking instruction. By the end of the 4-week series, participants who responded to a questionnaire reported eating more cups of fruits and vegetables and cooking more meals at home. The positive effects of this program could have beneficial health implications for low-income participants who are at increased risk for chronic diseases (such as heart disease, diabetes and obesity). Higher fruit and vegetable consumption has been shown to decrease risk of these diet-related diseases. Improving diet quality and reducing rates of chronic diseases among this high-risk population could help decrease long-term health care costs. Thus, creating more opportunities to engage low-income families in gardening and cooking activities could positively impact many low-income communities throughout California.

Nutrition and gardening instruction taught simultaneously has the potential to impact the health and financial well-being of a large audience in Los Angeles County and beyond. Future interventions may unveil more money-saving advantages associated with garden and nutrition instruction, especially among low-income audiences, than were realized through this project.

Dissemination of Findings:

The findings from this gardening series are still being analyzed. There are many more participants who took part in the 4-week *Grow LA Victory Garden* series, but not all sites offered the nutrition and cooking component. As the data continues to be analyzed, we will look at the differences in vegetable consumption and knowledge of preparing and cooking vegetables among participants who received the gardening, nutrition and cooking classes compared to those who only received the gardening classes. We expect that the individuals who received the nutrition and cooking component will show greater improvement in the consumption of fruits and vegetables and knowledge of preparing and cooking home-grown foods.

The *Grow and Eat Fresh in LA* project resulted in the updated manual for beginner gardeners, the Spanish-translated gardening manual, and refined evaluation tools. We plan to share successes of the project with nutrition and garden professionals, which will provide a way for this project to be replicated in other low-income communities. Once all data is analyzed and

compared across groups, we plan to reach professional audiences by publishing project results in appropriate peer reviewed journals, such as *California Agriculture* and *Journal of Extension*. In order to disseminate information to the target community and the general public, we will post an article on the University of California Food Blog and UC Delivers.

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Table I: Demographic Breakdown

Demographic Breakdown of Program Participants		
	<i>Number</i>	<i>Percent</i>
Age:		
<i>5-17</i>	9	10%
<i>18-59</i>	74	80%
<i>60+</i>	10	10%
Sex:		
<i>Male</i>	20	22%
<i>Female</i>	73	78%
Race:		
<i>African American</i>	6	7%
<i>Asian</i>	13	14%
<i>American Indian/ Alaskan Native</i>	2	2%
<i>Native Hawaiian/ Other Pacific Islander</i>	3	3%
<i>White</i>	62	67%
<i>Multiple</i>	2	2%
<i>Not provided</i>	5	5%
Hispanic:	30	32%
Total Number of Participants Providing Demographic Info: 93		

Table II: Pre/Post-Test Questions Related to Diet

Questions:	Pre-test Responses	Post-test Responses
Do you currently have a vegetable garden?		

<i>Yes</i>	34 (47%)	22 (71%)
<i>No</i>	38 (53%)	9 (29%)
Why do you want to have a vegetable garden?		
<i>Fun, relaxation</i>	56 (26%)	24 (28%)
<i>Save money</i>	45 (21%)	14 (16%)
<i>Eat a healthier diet</i>	50 (23%)	24 (28%)
<i>Ensure my food is free of pesticides</i>	51 (24%)	18 (21%)
<i>Other</i>	14 (6%)	6 (7%)
Do you eat a variety of fruits and vegetables?		
<i>Yes</i>	69 (96%)	29 (94%)
<i>No</i>	0	2 (6%)
<i>Unsure</i>	3 (4%)	0
How many cups of fruits and vegetables do you eat per day (estimate)?		
<i>None</i>	1 (1%)	0
<i>1 or 2</i>	28 (39%)	7 (23%)
<i>3 or 4</i>	30 (42%)	15 (50%)
<i>5 or more</i>	13 (18%)	8 (27%)
Do you believe fruits and vegetables are an important part of the diet?		
<i>Yes</i>	71(99%)	31 (100%)
<i>No</i>	1 (1%)	0
Do you know how to prepare and cook vegetables grown in the garden?		
<i>Yes</i>	49 (68%)	27 (87%)
<i>No</i>	9 (13%)	4 (13%)
<i>Unsure</i>	14 (19%)	0
Please rate your cooking skills		

<i>I do not know how to cook</i>	2 (3%)	0
<i>I have beginning cooking skills</i>	19 (26%)	5 (17%)
<i>I have intermediate cooking skills</i>	37 (51%)	14 (47%)
<i>I have advanced cooking skills</i>	13 (18%)	11 (37%)
<i>Unsure</i>	1 (1%)	0
On average, how many home-cooked meals do you prepare in one week?		
<i>None</i>	7 (10%)	0
<i>1-2</i>	11 (15%)	3 (10%)
<i>3-4</i>	22 (31%)	7 (23%)
<i>5 or more</i>	32 (44%)	20 (67%)
Total number of responses pre-test = 73, Total number of responses post-test = 31		

Table III: Taste Testing Results

Item Taste-Tested	Number of participants who tried food before	Number of participants willing to try again	Number of participants willing to serve to families
Beets, cooked	8	8	8
Cabbage, raw	8	8	8
Swiss Chard, cooked	6	6	6
Winter Squash	7	7	7
Pineapple slaw	8	9	9
Swiss chard	10	10	10
Root vegetables	12	12	12
Fruit & Veggie Smoothie	12	11	11
Mixed greens	12	12	12
Cauliflower, cooked	9	9	9

Kale	5	5	5
Beets	6	6	6
Cabbage	6	6	6
Winter Squash	6	6	6
Mixed vegetable recipe	7	15	15
Mixed vegetable recipe	18	18	18
Total	140 (88%)	148 (93%)	148 (93%)

Total number of participants who participated in taste-testings = 159

Table IV: Follow-up Survey

Questions:	Number	%
Do you currently have a vegetable garden?		
Yes	14	88%
No	2	12%
The Victory Garden classes helped improve knowledge of gardening?		
No, not at all	1	6%
Yes, a little	0	0
Yes, a lot	15	94%
If you have a vegetable garden, has it helped you save money on groceries?		
No, not at all	5	31%
Yes, I spend a little less than usual	6	38%
Yes, I have saved a lot of money on groceries	1	6%
Unsure	4	25%
If you save money on groceries because of your vegetable garden, approximately how much do you save each month?		
Less than \$10	12	75%

<i>\$10 - \$19</i>	2	13%
<i>\$20 - \$29</i>	1	6%
<i>\$30 - \$39</i>	0	0
<i>\$40 - \$49</i>	0	0
<i>\$50 or more</i>	1	6%
Do you eat a variety of fruits and vegetables?		
<i>Yes</i>	16	100%
<i>No</i>	0	0
<i>Unsure</i>	0	0
Do you know how to prepare and cook vegetables grown in the garden?		
<i>Yes</i>	15	94%
<i>No</i>	0	0
<i>Unsure</i>	1	6%
On average, how many home-cooked meals do you prepare in one week?		
<i>None</i>	0	0
<i>1-2</i>	1	6%
<i>3-4</i>	3	19%
<i>5 or more</i>	12	75%
Have the Victory Garden classes helped you and your family make healthier decisions?		
<i>No, not at all</i>	3	19%
<i>Yes, a little bit</i>	7	44%
<i>Yes, a lot</i>	5	31%
<i>Unsure</i>	1	6%
Have you attended any other gardening classes or workshops since the Victory Garden classes ended?		

<i>Yes</i>	8	50%
<i>No</i>	8	50%
Have you met with your Victory Garden instructor(s) since the classes ended?		
<i>Yes</i>	5	31%
<i>No</i>	11	69%
Total number of responses =16		