



# "Healthy Gardens, Healthy Youth": People's Garden School Pilot Project



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## Program Overview

The "Healthy Gardens, Healthy Youth" (HGHY) People's Garden School Pilot Project engaged more than 4,000 elementary school students through experiential learning to determine if access to gardening improves fruit and vegetable (FV) consumption. We created food gardens in 47 low-income schools as part of a 2.5-year research study.



- HGHY is built on the unique strengths of our nation's Land Grant Universities and their Cooperative Extension (LGU-CE) programs to:
- Plan, develop, and implement a pilot People's Garden program that is national in scope, impact, and reach, yet is locally adaptable;
  - Combine the theory and practices associated with positive youth development and leadership in 4-H programs with those of the nutrition education programs (e.g. SNAP-Ed, EFNEP) into a holistic garden-based learning model in conjunction with developing school and community gardens;
  - Locally adapt the gardens and lessons to climate and classroom needs;
  - Build community by engaging local partners.



### Project Goals

- Goal 1.** Increase Fruit and Vegetable Consumption
- Goal 2.** Empower Youth in Their Communities
- Goal 3.** Contribute Toward a Sustainable Environment and Food System
- Goal 4.** Build a Nationwide Network

### Project Partnerships

Cooperative Extension offices from the 4 states involved in the project led the development and implementation of the gardening and lessons along with collection of the research data:

- Washington State University Extension
- Cornell University Cooperative Extension
- Iowa State University Extension and Outreach
- University of Arkansas Extension



Cornell University developed the research protocols and instruments and oversees data collection and analysis.

47 elementary schools who have 50% or more students receiving free and reduced priced meals and had no existing school gardens)

Local community-based volunteers

### Follow the Project:

- Project website: <http://peoplesgarden.wsu.edu>
- Facebook: <http://www.facebook.com/HealthyGardensHealthyYouth>
- YouTube channel: <http://www.youtube.com/ExtSchoolGarden>

### Acknowledgements

- This project would not have been possible without support from several sources, including:
  - The 24 Extension educators who collected 86,000 surveys, took 129,000 pre and post lunch tray photos, collected 2,000 cafeteria production records, implemented 4,000 educational toolkit lessons, and planted over 6,200 square feet of gardens.
  - 47 schools, their teachers, and their administrators comprising both the treatment and control groups, allowing all the above to occur in addition to their 'normal' days work.
  - Over 30 (and growing) Cornell research assistants who worked in Dr. Nancy Wells' lab to support the development, collection, and analysis of the research data
  - Financial support from USDA FNS, Robert Wood Johnson Foundation, Wellmark Foundation, and local contributors
  - The project leadership team
- Please see the Program Partners page of our web site (<http://peoplesgarden.wsu.edu/program-partners/>) for a complete listing of partners in this project

## Research Design & Methods:

This study is a randomized controlled trial examining effects of school gardens on fruit and vegetable (FV) consumption and other outcomes among children in grades 2-6. Schools were randomly assigned to either the garden treatment group or the wait-list control group.

- Classrooms in the treatment group received a school garden; an educational toolkit comprised of lessons, activities, suggested recipes, and a garden implementation guide; and training on how to use the toolkit.
- Classrooms in the control received neither a garden nor access to the educational toolkit until data collection was completed.

The project's first year of data collection involved 2nd, 4th and 5th grade classes; Year 2 followed the same cohort as they enter into the 3rd, 5th and 6th grades. Data were collected from all schools (intervention and control).

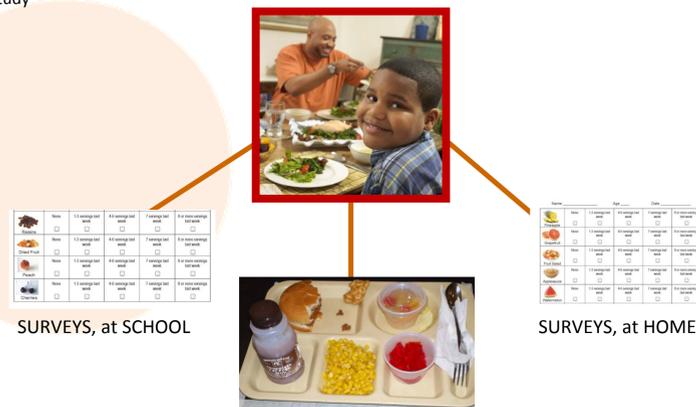
Name	Age	Date	What Foods Did You Eat?			
Instructions: We would like to know how much fruit and vegetable you ate (or drank) during the last week of school. The FV can be fresh, frozen, canned or dried. Check the column that best describes how often you had each item. For instance, if you had an orange twice in the last week, you would check "3-4 servings each week".						
→ A serving of <b>fruit</b> is equal to: 1 medium piece of fresh fruit, 1/2 cup of fruit salad, 1/2 cup of raisins or other dried fruit						
→ A serving of <b>vegetables</b> is equal to: 1 medium carrot or other fresh vegetable, 1 small bowl of green salad, 1/2 cup of fresh or cooked vegetables, 1/2 cup of vegetable soup						
			Fruit			
Apple	None	1-3 servings last week	4-6 servings last week	7 servings last week	8 or more servings last week	
Banana	None	1-3 servings last week	4-6 servings last week	7 servings last week	8 or more servings last week	
Orange	None	1-3 servings last week	4-6 servings last week	7 servings last week	8 or more servings last week	
Apple	None	1-3 servings last week	4-6 servings last week	7 servings last week	8 or more servings last week	
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### Research Questions:

- The research is designed to address whether each of the following occur as a result of involvement with the garden:
- R1 – Did students consume more FV at school?
  - R2 – Did students consume more FV at home?
  - R3 – Did students' preference for FV increase?
  - R4 – Do students show improvement in nutritional knowledge and STEM self efficacy?

### Assessing Consumption of Fruits and Vegetables:

It is difficult to directly assess what youth in elementary school eat as they cannot reliably provide a 24-hour dietary recall (a standard approach to assessing an individual's dietary intake). Therefore, our project uses multiple measures to assess consumption of FV by the youth in the study



### Specific Research Constructs and Measures

- FV consumption: At each data collection period, 3 days of photographs are taken of children's lunch trays before and after they eat. These are later analyzed for FV consumption.
- FV availability at home: Children complete a questionnaire which lists 39 FV and asks whether each was "in your home in the last week?" (Baranowski et al., 2003a).
- FV preference: Children complete a questionnaire indicating how much they like (3 point scale) each of 39 FV (Baranowski, 2003b).
- FV taste: Children respond, "I have tasted this," or "I have never tasted this" to determine what FV they have tasted.
- Nutritional knowledge: Informed by the curriculum, children answer 7 multiple-choice questions about plant parts and nutrients.
- STEM skills: Children answer 15 questions about their science and math abilities (adapted from Iowa 4-H Program).
- FV consumption (at home): A Food Frequency Questionnaire is sent home for parents to fill out with the child (Baranowski, 2003c).

## Implementation

### Educational Toolkit

HGHY's Educational toolkit provides a road map for successful school gardens and learning experiences. This toolkit contains hands-on, fun lessons and learning activities to use in the classroom and garden during the two years that students were gardening (grades 2 and 4 during the project's first year, and grades 3 and 5/6 during the second year). Lessons and activities for the Educational Toolkit were drawn from existing curricula



### Toolkit Development

Extension specialists in Nutrition, Youth Development and Horticulture from Cornell, Iowa State and Washington State Universities' Cooperative Extension Service reviewed 17 curricula, numerous garden implementation resources and other materials from across the nation to select appropriate resources to support this project.



### Criteria used for inclusion in the Toolkit were:

- Experiential learning
- Age appropriate
- Research-based content
- Science, Technology, Engineering and Math (STEM) area focus
- Enrich classroom instruction
- Support the school garden

Through webinars and other web based materials, we provided training across four states for extension educators, teachers, volunteers. Recorded training videos to demonstrate lessons and garden activities, such as designing the garden, were embedded in the online webinars and were posted to YouTube. This team was lead by Karen Barale.



### Toolkit Components

The toolkit consists of three elements:  
**Lesson plans with activities, snack suggestions & recipes**

- 11 lessons each for 2<sup>nd</sup> & 4<sup>th</sup> grades for Year 1
- 9 lessons each for 3<sup>rd</sup> & 5<sup>th</sup> grades for Year 2
- Lessons aligned with Common Core Standards.

### Supporting resources

- Using garden produce in school food services
- Food safety in the garden

### Garden Implementation and Beyond Guide

Recognizing that many of the elementary school teachers taking part in the project may not have had any experience gardening themselves, we created a guide to provide easily accessible, simple instruction on an array of topics, including:

- How to create, plan, plant and maintain the garden through the school year
- Gardening during the summer
- Engaging volunteers
- Building community capacity
- Sustaining and growing a school garden program

**IMPLEMENTATION AND BEYOND: A GUIDE TO CULTIVATING A THRIVING SCHOOL GARDEN**  
This section serves as an addendum to the Educational Toolkit and may be used as a resource on its own.

**INTRODUCTION**  
While this Educational Toolkit is specifically written for the close to 60 schools taking part in the Healthy Gardens, Healthy Youth (HGHY) pilot program, the content and curriculum within are intended to be applicable to and eventually made available to any school and any garden seeking to incorporate youth into gardening programs.

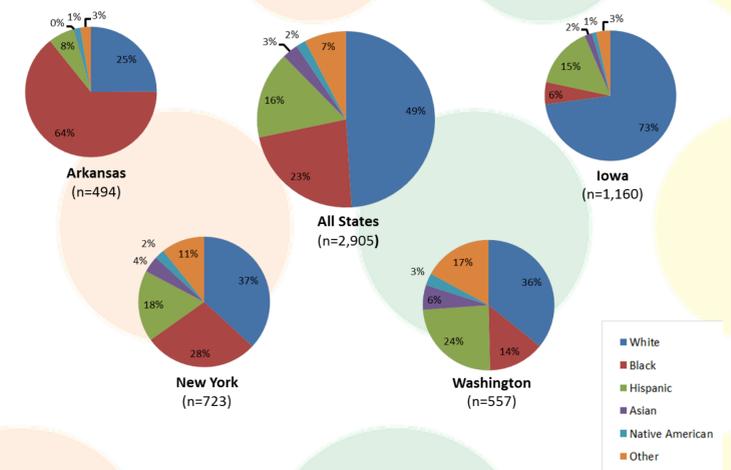
There are thousands of excellent resources and garden-based learning curricula available from many organizations. Rather than write new material, a main purpose of this project was to bundle some of the best garden-based learning curricula into one user-friendly toolkit. Similarly, to create the *Implementation and Beyond* guide, we reviewed already written resources, slightly adapted them when necessary, and compiled them into one comprehensive document. In reality each section could go on for dozens of pages. In the interest of efficiency, we sought to pull out and provide you the most up-to-date, applicable and critical information for each topic. We hope *Implementation and Beyond* is simple, yet thorough.

As part of the HGHY pilot program, you will find that some of the steps outlined in the *Implementation and Beyond* guide will not apply to your garden, contact us at the contact below.

## Preliminary Results

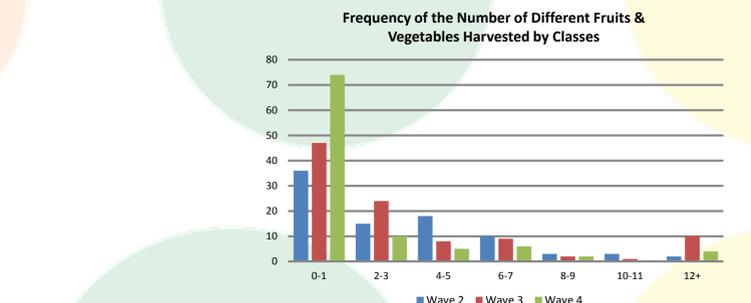
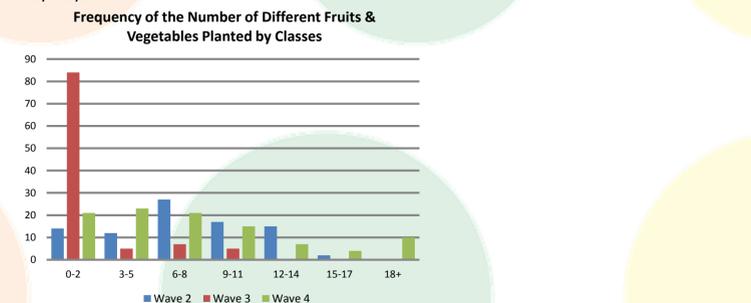
### Who Participated

States and schools for this pilot project were intentionally selected to reach a diverse set of youth, to ensure that any lessons learned were broadly applicable. Based on our Fall 2011 data, we were able to reach a ethnically diverse audience within our low-income schools



### What was Planted and Harvested and Where Did it Go?

To fully engage students and allow them to experience all aspects of the gardening process, HGHY encouraged teachers to encourage teachers to help the students decide what to plant what to plant in their garden. The data below shows how many different types of fruits and vegetables were planted and harvested across all classrooms and planting periods (waves, n=289 classrooms) in the intervention group. When possible, produce harvested from the gardens was shared with the students in several ways (shown below). Each classroom may have used the produce in one or more ways.



### How Produce From the Garden was Used



### Project Contacts:

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