

DINÉ COLLEGE

THE HIGHER EDUCATION INSTITUTION OF THE NAVAJO SINCE 1968

An Intervention to Promote Navajo Gardening, Nutrition and Community Wellness

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Goal & Specific Aims

- Goal: To improve community health and wellness by encouraging family gardening activity and improved nutrition.



- Specific Aim 1: Evaluate whether the intervention (integrated technical assistance, technical and behavioral workshops, and community outreach) is associated with presence of a garden in the backyard and an increase in frequency of gardening.
- Specific Aim 2: Assess whether the association of the intervention (workshops and community outreach) is mediated by social norms about gardening, as well as self-efficacy and behavioral capability to garden.



Background

Economic Considerations

- Navajo annual per capita income is \$10,547, compared to \$27,334 U.S. (U.S. Census 2010).
- Percentage of Navajo people below the poverty level is 37.7%, compared to 13.8% in the U.S. overall (U.S. Census 2010)
- Cost, availability, & shelf life of foods in remote areas affect dietary choices.

Obesity and Diabetes on the Navajo Nation

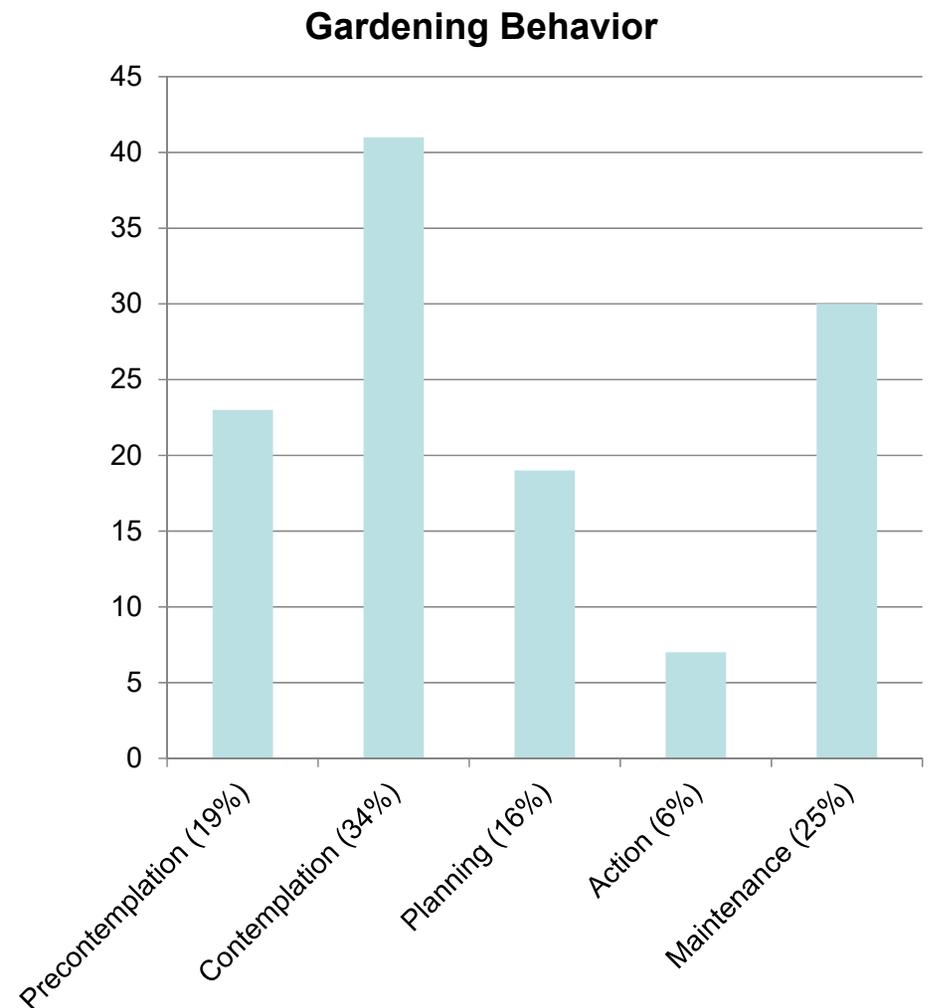
- Obesity is increasing among the Navajo 67% overweight or obese in NAIHS).
- Fruit and vegetable consumption is low: over half of adults 3 or fewer servings daily.
- 2007: Type-2 diabetes is >14% of those 20-74 years of age.



Prior Survey Results: Gardening Activity

Stage of Change in Gardening	Frequency	Percent
Precontemplation	23	19%
Contemplation	41	34%
Planning	19	16%
Action	7	6%
Maintenance	30	25%
Total	120	100%

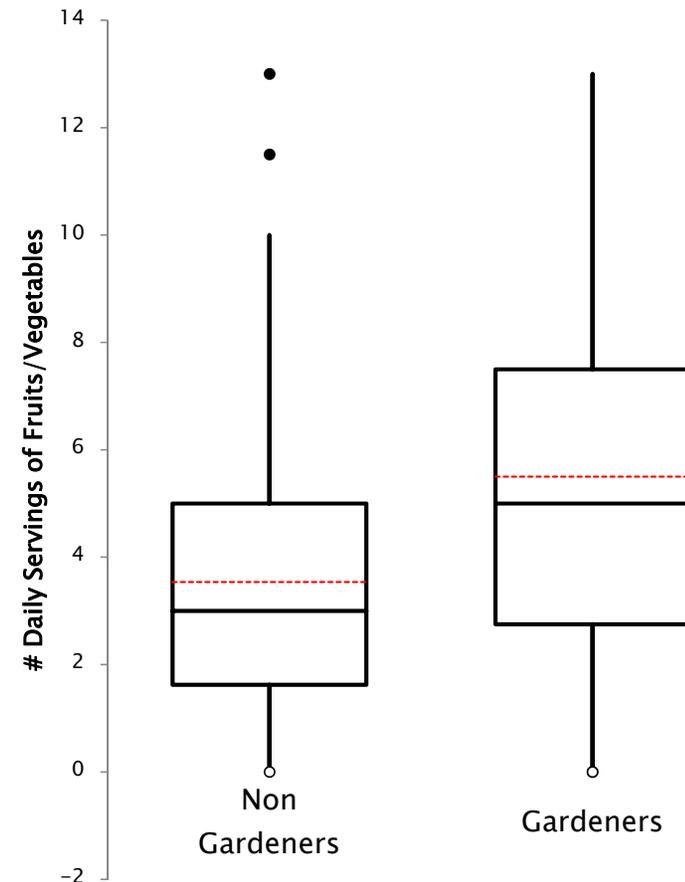
This question was based on the Stages of Change model. Those in the first three groups were then categorized as “non-gardeners” and the Action and Maintenance groups were considered “gardeners.”



Prior Survey Results: Nutrition from Gardening

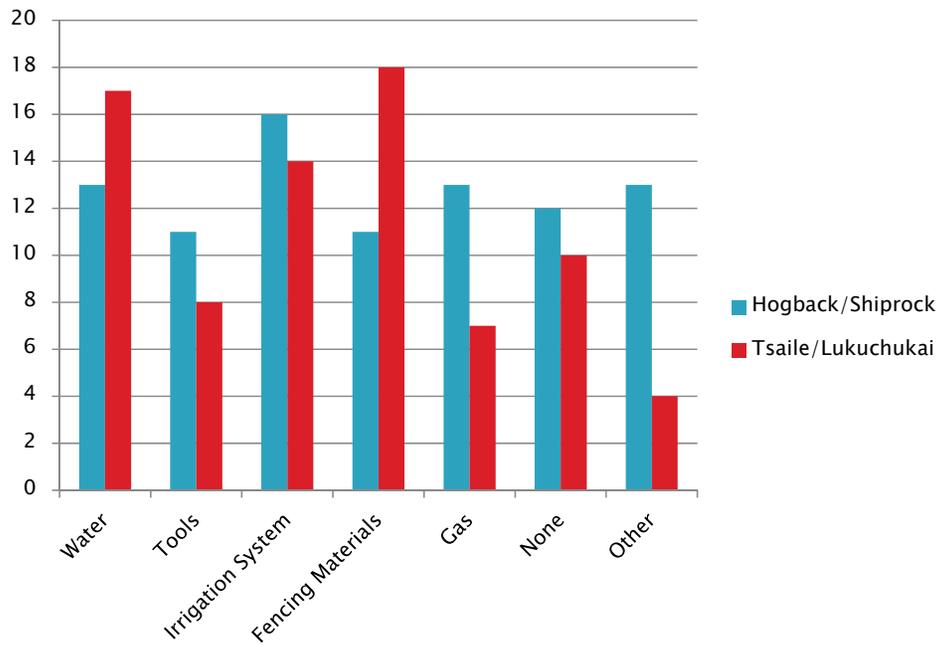
Of those respondents who reported daily fruit and vegetable consumption (24 hour dietary recall):

- **35 gardeners** reported mean servings of **5.5** (SD 3.7)
- **82 non-gardeners** reported mean servings of **3.5** (SD 2.7)
- This is a significant difference: gardeners ate on average **2 more servings of fruits and vegetables** (TTest $p=.0035$, with outliers removed)

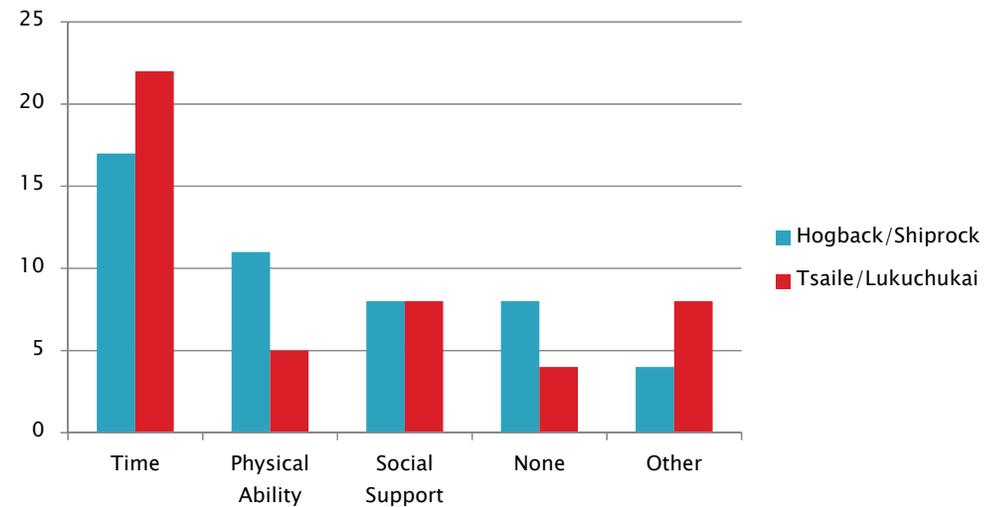


Barriers Identified by Non-Gardeners in Survey

Money Related Issues



Individual Issues



Recommendations

- ▶ Provide workshops that feature traditional gardening methods, use of indigenous seeds, as part of “master gardening”
- ▶ Encourage use of drip irrigation, water collection, dry farming methods in areas where irrigation infrastructure is non-existent or not functioning
- ▶ Seek partners (chapters, community groups, other programs to work on broader infrastructure issues:
 - Water access – ditches, pumps, improved areas around other sources
 - Assistance kits for new gardeners
 - Equipment for loan



Proposed Intervention

- ▶ Family Gardens
 - Fencing
 - Soil Improvements
 - Drip Irrigation
- ▶ Technical and Behavioral Workshops
 - Site Preparation
 - When/what to Plant
 - Irrigation
 - Weed/Pest Control
 - Harvesting & Seed Saving
 - Healthy Cooking and Preserving



Intervention Sites

- 30 participating households from 4 Chapters (communities)
- Participants range from 21 to 62 years of age
- 23 Female; 7 Male
- 18 live in established housing areas; 12 rural
- 26 of the 30 households had running water



Preparing Gardens



- ▶ Household gardens in Intervention. Components of these gardens include fencing to keep animals out, small wood gate, drip irrigation from NTUA tap water, and soil improvements.



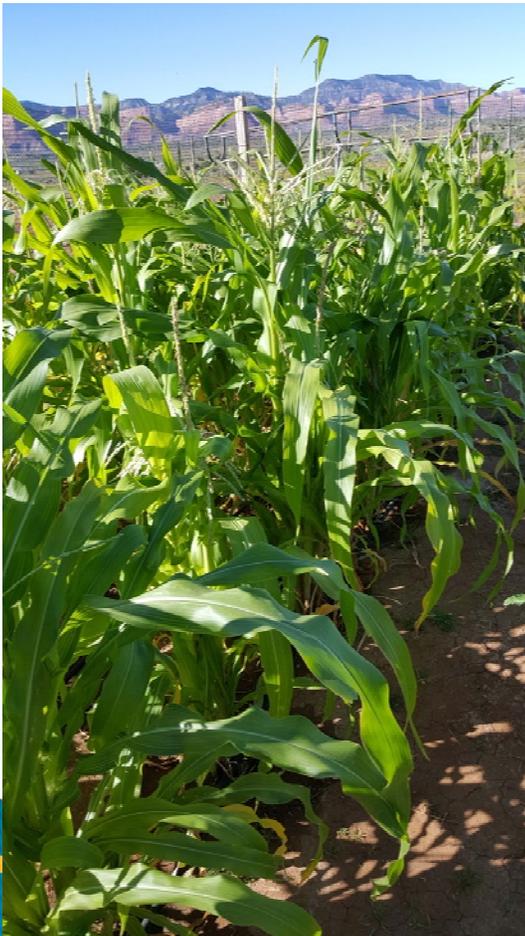
Materials

- materials from Home Depot, and Lowe`s
 - Cost material vary on site area
 - Use of backhoe to dig rocky soil and pull dead trees
 - Railroad ties for barrel set up
-
- 1 Shovels, 1 Hoes, 1 Rake, Fencing materials: posts, clippings, metal fencing, and post driver, gloves, face mask, drip irrigation materials: 12-20ft, 9-2ft, 2-4ft tubing, drip buttons: 10 per 20ft tubing, drip hole puncture: 1 or 2, 2 elbow connectors, 9-10 T-shaped connectors, peat moss, organic compost, and vermiculite/pearlite



Barriers

- Soil – Clay, Sand, Rocky areas at each garden sites
- scheduling for a backhoe/to remove rocks/ plowing field
- Bug infestation
- Materials
- Meeting with Gardeners
- no running water / Barrel option



Data Analysis

▶ Key Explanatory Variables

- Knowledge: “Do you know how to...”
 - Prepare a garden
 - Maintain a garden
 - Harvest & store fruits and vegetables
- Self-Efficacy: “How confident, self-assured are you that you can...”
 - Prepare a garden
 - Maintain a garden
 - Harvest and store fruits and vegetables
 - Prepare fruits and vegetables
 - Eat fruits and vegetables every day

▶ Key Outcome Variables

- Gardening Frequency (times/week)
- Servings of fruits/vegetables per day



Knowledge & Self-Efficacy:

Participants reporting “a lot” of knowledge, confidence

	Baseline		Follow-up	
	n	%	n	%
Knowledge: “Do you know how to...”				
Prepare a garden	4	13.3	13	46
Maintain a garden	14	53.3	17	60.7
Harvest & store fruits and vegetables	9	30.0	10	35.7
Self-efficacy: “How confident are you that you can...”				
Prepare a garden	12	40.0	16	57.1
Maintain a garden	20	66.7	20	71.4
Harvest & store fruits & vegetables	20	66.7	9	32.1



Gardening & Nutrition Outcomes

	Baseline		Follow-up	
	<u>μ</u>	<u>95% CI</u>	<u>μ</u>	<u>95% CI</u>
Gardening frequency (times/week)	3.3	0.0,6.1	7.6	5.5,9.5

Paired t-test shows significant difference between baseline and midpoint (p=.004)

Fruit & Vegetable Servings (per day)	2.9	2.3,3.6	3.1	2.3,3.8
Difference nonsignificant				



Future Work & Dissemination

- ▶ Final Data Collection Questionnaire
- ▶ Data Analysis to explore what knowledge, self-efficacy, and other intervention factors have impact on outcomes
- ▶ Dissemination Efforts:
 - Community dissemination to chapters
 - Extension materials for further dissemination
 - Technical report for area cooperative extension agents
 - Publication and presentation in a variety of Navajo Nation and additional national conferences



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