COMMUNITY ATTITUDES TOWARDS TRADITIONAL O’ODHAM FOODS

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I. INTRODUCTION

Wheat flours makes me sick! I think it has no strength. But when I am weak, when I am tired, my grandchildren make me gruel out of the wild seeds. That is food.

Maria Chona, 1933, Papago Woman

The wisdom and practical knowledge of traditional peoples has often been discounted as anecdotal at best. However, when 90-year-old Tohono O’odham elder Maria Chona spoke these words 65 years ago, she provided an accurate assessment of the effects of non-traditional foods on the health of the Tohono O’odham.

During Maria Chona’s lifetime – and into the 1960’s – no member of the Tohono O’odham tribe had ever been afflicted with Type II (adult-onset) Diabetes. Today more than half the population – including children as young as seven-years-old – suffer from the disease. This is the highest rate of any population in the world.

In the Fall of 2000, Tohono O’odham Community Action (TOCA) and Tohono O’odham Community College (TOCC) joined together to initiate a research program aimed at better understanding the causes and impacts of diabetes within the Tohono O’odham. This report represents the second in an ongoing research endeavor whose ultimate goal is to develop recommendations for how community-based organizations, tribal educational institutions, tribal programs and federal food assistance programs can contribute to reducing the incidence and impacts of Type II Diabetes within the Tohono O’odham community.

THE RESEARCH PARTNERS

TOHONO O’ODHAM COMMUNITY COLLEGE (TOCC)

Tohono O’odham Community College (TOCC) is a two-year tribal community college dedicated to serving the needs of the Tohono O’odham Nation. TOCC’s mission is to enhance the unique Tohono O’odham Himdag by strengthening individuals, families and communities through wholistic, quality higher education services. These services provide a variety of academic, life and development skills.

TOCC’s objectives include the following:

* To strengthen academic learning that will reinforce a strong competitive spirit to participate in an ever-changing
society.

- To include elders as primary resources, instructors, advisors and counselors as a means of reinforcing the O'odham Himdag.
- To recruit highly qualifies faculty and staff who are dedicated to the art of teaching, advising and service.
- To ensure the integration of appropriate parts of the Tohono O'odham Himdag in the physical environment, curriculum and processes of the college.
- To ensure that curricular offerings are relevant to the needs of the community and individuals.
- To establish a technology core that will enable the community and individuals to meet the challenges of the future.

**TOHONO O'ODHAM COMMUNITY ACTION**

Tohono O'odham Community Action (TOCA) is an independent grassroots organization which strives to create effective, culturally based responses to the problems that confront our community. In pursuit of a sustainable community, TOCA's programs work directly to create: 1) sustainable economic development, 2) a community food system that keeps us healthy, 3) programs which rejuvenate our cultural traditions, and 4) ways of encouraging our young people to become strong members of the Tohono O'odham community. In order to achieve these goals, TOCA has developed four current program areas:

- The Tohono O'odham Basketweavers Organization
- The Tohono O'odham Community Food System
- The Tohono O'odham Community Arts and Culture Program
- The Youth/Elder Outreach Program

**TOCA'S PRINCIPLES**

TOCA has adopted four principles that guide our decisions about program goals and strategies:

- **O'odham Himdag: Wisdom from our past creating solutions for our future** - The O'odham Himdag (Desert People's Way) guides us as we seek to develop culturally appropriate solutions to the challenges that confront our community. By drawing upon our heritage and cultural traditions we are able to create lasting solutions and a stronger community.

- **Community Assets: See our resources, not just our needs** - Our community already possesses many of the assets that are necessary to create a healthy and sustainable community. TOCA encourages people to take stock of our various community assets in order to develop indigenous solutions, rather than focus on the problems while importing "solutions" from the
outside. The wisdom of our elders, the enthusiasm of our young people, the richness of our land, the centrality of our extended families, and our desire to create a healthier community all lead to the capacity to create solutions that will be culturally-based and sustainable.

- **Context is crucial:** *Strengthening the material roots of O’odham culture* - It is not enough to simply preserve cultural activities, such as ceremonies, songs and stories. The material basis out of which these cultural practices grew must also be maintained. A ground blessing dance looses much of its power when only ever performed for an audience in an auditorium rather than in the fields where the O’odham have planted for generations. TOCA works to redevelop the material foundation of the O’odham culture.

- **Encourage community self-sufficiency** - Social programs on the Tohono O’odham Nation have too often created dependent relationships which destroy the sustainable structures that have previously supported the people. For example, although well-intentioned, the introduction of federal food programs helped devastate the traditional local food system, which has led directly to a high incidence of diabetes among the Tohono O’odham. These programs created destructive dependency where self-sufficiency had previously existed. In response, TOCA’s Community Food System attempts to re-empower the community to become increasingly self-sufficient. TOCA continues to work toward such self-sufficiency in all of its programs.

**TOCA’s Strategies**

Rather than keeping these principles abstract, they have become central to TOCA’s program development process. Some examples of these commitments in action are:

- **Tohono O’odham Food System** - Until 1960, diabetes was unknown among the Tohono O’odham. Today, the O’odham have the highest rate of adult-onset diabetes in the world. The cause for this devastating change is the destruction of the traditional food systems and diet. Several scientific studies have confirmed that traditional O’odham foods - including tepary beans, mesquite beans, cholla (cactus) buds and chia seeds - help regulate blood sugar and significantly reduce the effects of diabetes. In short, the consumption of traditional O’odham foods has been documented to decrease both the rate and severity of diabetes.

As a way of addressing this problem, TOCA recognizes the assets already present in our community: wild desert crops, many unused fields, the annual monsoon rains, elders willing to share the traditions and skills related to traditional
Tohono O'odham agriculture, unemployed individuals seeking creative ways to make a living, and an informal market structure which allows for distribution of such foods across the Tohono O'odham Nation. Drawing upon our heritage, we have worked to develop a community food system that provides the Tohono O'odham Nation with a healthy food supply. By combining the cultural knowledge of our elders, the assets already present in our community and innovative institutions (such as gathering cooperatives and community gardens), TOCA is working to address the root causes of the poverty and disease that are ravaging our community.

- Tohono O'odham Basketweavers Organization — The Tohono O'odham Nation lacks a solid economic base and the infrastructure necessary for conventional forms of economic development. As TOCA’s members began to explore ways of developing an economic foundation, we once again turned to our cultural heritage — in this case basketweaving. For more than ten thousand years, the O'odham and their ancestors have woven some of the finest baskets in the world. Today, the retail prices for O’odham baskets can be as high as several thousand dollars. However, without direct access to markets, basketweavers are at the mercy of unfair traders, often receiving less than a quarter of the retail price.

In response, TOCA created a Basketweavers Organization that makes basketweaving a viable economic option and valued cultural practice for increased numbers of O’odham. By working to regulate traders, developing a cooperative to market baskets and teaching a new generation of O’odham weavers, TOCA has drawn upon the O’odham Himdag to create sustainable economic development.

- Elder/Youth Outreach Initiative — The crisis of identity among Native American youth today is one of the most critical issues for the future development of indigenous communities. Given the tremendous damage to traditional social forms (ceremonies, material culture, sustainable economies, etc.) that has occurred, many Native youth are forced to seek a sense of identity in other places, such as the structured environment of gangs or the nihilism of drugs.

TOCA’s Elder/Youth Outreach Initiative works with our community’s young people to help them develop a strong sense of identity rooted in the O’odham Himdag. By taking significant leadership roles in TOCA and by working closely with community elders, youth participate in the rejuvenation
of Tohono O'odham culture and the development of a sustainable economy on the Tohono O'odham Nation. Through this process, TOCA is helping youth face into their crisis of identity, learn "who they are," and develop the skills they will need in order to lead the Tohono O'odham community into the future. TOCA's Elder/Youth Initiative is planting the seeds of a bright future for the Tohono O'odham community.
II. RESEARCH STRATEGY

A. PRIMARY RESEARCH QUESTIONS
In conducting this second stage of research, two primary questions were posed:

- What are the attitudes of members of the Tohono O'odham community toward traditional foods, food production and the Tohono O'odham food system. Of particular interest was the attitudes of parents of young children and young families.
- How can these community attitudes guide how community-based organizations, tribal educational institutions, tribal programs and federal food assistance programs can contribute to reducing the incidence and impacts of Type II Diabetes within the Tohono O'odham community.

B. METHODOLOGY
This study builds upon the qualitative and quantitative analysis presented in the first of our research reports, The Impact of Food Assistance Programs on the Tohono O'odham Food System: An Analysis and Recommendations. In order better understand community attitudes toward traditional foods, diabetes and the Tohono O'odham food system, a survey was developed by TOCC and TOCA staff. This survey was then tested on more than 20 people, including other staff, students in TOCC’s Tohono O’odham Food Systems class (TOC150) and other community members. Feedback and suggestions from these tests were then incorporated into the final survey design. The resulting document was the Traditional Tohono O’odham Foods Survey (see Appendix I).

This survey was then distributed to members of the Tohono O'odham community through various channels, including:

- 209 copies of the survey were distributed to parents of young children in the Tohono O'odham Nation’s Head Start program. The Head Start program has centers in five communities across the Tohono O'odham Nation, ensuring that responses were received from a wide geographic area. Parents of Head Start students were selected in order to ensure that the survey’s target audience of young families was reached. 54 surveys were completed through the Head Start program, a 25.83% return rate.
- The survey was distributed to tribal members taking classes at the Tohono O’odham Community College. TOCC students tend to be young and many of them have children.
- An outreach table was set up at the 2002 Tohono O’odham Wellness Conference to allow conference attendees to
opportunity to complete the survey and to ask questions about the survey process.

• TOCC and TOCA staff distributed the survey to a variety of other community members on a more informal basis.

Although this distribution strategy did not provide a completely randomized sample, it did succeed in reaching the target audience of young families and people with children. 60.16% of respondents were aged 35 or younger with an additional 21.88% of respondents aged 36 to 50. Exactly 50% of respondents have children 18-year-old or younger.

A total of 128 completed surveys were returned. These responses were then entered into a computer and analyzed. For the raw data, please consult “Appendix II: Raw Survey Data.”

Once data analysis was complete, results were then utilized to develop a set of conclusions and recommendations for how community-based organizations, tribal educational institutions, tribal programs and federal food assistance programs can contribute to reducing the incidence and impacts of Type II Diabetes within the Tohono O’odham community.
III. DIABETES, CULTURE AND THE TOHONO O'ODHAM FOOD SYSTEM

A. THE TOHONO O'ODHAM COMMUNITY

The Tohono O'odham (formerly known as Papago) Nation sits in the heart of the Sonoran Desert, sixty miles west of Tucson, Arizona. Approximately 14,000 of the tribe's 20,000 members live on this main section of the Tohono O'odham Reservation. The Nation encompasses nearly 4,600 square miles (an area larger than Connecticut).

The Tohono O'odham community faces many of the same challenges that other Native American communities struggle to address. Here, however, problems are even more acute:

- Economics — Per capita income on the Reservation is $3113 (compared with more than $14,000 nationally). 65.7% of the population is below the poverty level (compared to 13.1% nationally). Approximately half of the adult population is unemployed.
- Health — 50% of all Tohono O'odham adults have adult-onset diabetes, the highest rate in the world. Tuberculosis deaths are six times the national average. Life expectancy is more than six years shorter than the U.S. average.
- Violence — In the past four years, the number of Tohono O'odham juveniles charged with serious crimes has more than tripled, almost entirely related to the introduction of gang activity to the community. The homicide rate is nearly three times the national average and twice the average for all Native American communities.
- Education — Less than half of the Tohono O'odham Nation's adults have completed high school, the lowest rate of all U.S. Native American tribes.
- Culture — Many Tohono O'odham traditions and ceremonies are currently threatened with extinction. For example, the Salt Pilgrimage, a boy's coming of age ceremony, has not been performed in nearly 50 years.

B. THE THREE ELEMENTS OF THE TRADITIONAL TOHONO O'ODHAM FOOD SYSTEM

For many centuries, the Tohono O'odham and their ancestors combined a series of well-adapted strategies of producing food in the arid lands of the Sonoran Desert. This traditional food system combined three primary components to provide the O'odham with a rich and varied diet. The three parts of this traditional Tohono O'odham food system were:
• Ak Chin Farming - Using the flood waters that accompany the summer monsoons, thousands of acres were planted with crops that are nutritious and well adapted to the short, hot growing season. These foods, included tepary beans, corn, squash, melons, chiles, caño ("sugar cane" sorghum") and much more. Many of these foods were eaten fresh and preserved for use throughout the rest of the year.

• Harvesting Wild Foods – Throughout the year, the desert provides a wide variety of wild foods that were collected and eaten. These wild foods included cholla buds, the fruit of different cacti, mesquite bean pods and acorns. Many of these foods were preserved for use throughout the year.

• Hunting – The animals of the desert also provided an important source of nutrition. The hunting of rabbits, deer, havalina and other desert dwellers was a significant supplement to the foods grown in O’odham fields and collected in the desert.

C. THE DESTRUCTION OF THE TRADITIONAL TOHONO O’ODHAM FOOD SYSTEM

The reason Elder Brother planned this was that some day in the future... the rains would not come down all over the earth very often, only once in a while, and the crops that the people raised wouldn’t be irrigated anymore by rain water.

- Tohono O'odham origin story

Until the second half of the 20th century, the Tohono O'odham were almost entirely food self-sufficient utilizing agricultural practices that date back over one thousand years. As late as the 1920’s, the community utilized traditional methods to cultivate over 20,000 acres in the floodplain of the Sonoran lowlands. By 1949, that number had declined to 2,500 acres. Today that number is certainly less than 25. At the same time the once common practice of collecting and storing wild foods declined in an equally dramatic way.

The causes for this decline are complex and multifaceted. They include the following factors:

• Many Tohono O’odham were encouraged by Federal work projects to take jobs as field labor for large, irrigated cotton farms that surround the Tohono O’odham homelands. Entire families left their communities for six to eight months each year, making it impossible for them to plant, tend and maintain their fields, to engage in the ceremonial life related to agriculture, and to collect wild foods on a seasonal basis.

• The introduction of and easy access to processed foods through Federal food programs and commercial outlets led many...
people to alter their diets and decrease the amount of traditional foods consumed.  
- These same social programs—although well intentioned—often created dependency relationships where self-sufficiency had previously existed. Over the course of a few short decades, the Tohono O'odham community went from being almost entirely food self-sufficient to being almost entirely food dependent.  
- As warned in the Tohono O'odham origin story, environmental factors (such as a lowering of the water table due to nearby development) combined with misguided governmental flood control efforts to make water sources for traditional agriculture even more scarce than normal in the arid Sonoran Desert. In many of the traditional farming villages, flood waters no longer reach the fields that once fed entire communities.  
- Large numbers of Tohono O'odham children were forcibly placed in boarding schools where they were prohibited from speaking their language and practicing their culture. At school, they were not exposed to the traditional ways in which knowledge was passed on within the culture. This meant that they did not learn the skills necessary to farm in the desert or how to collect, process and cook wild foods.  
- During the Second World War, most young O'odham men—those responsible for most of the farming and many parts of ceremonial life—were in the military for years at a time, leaving many fields empty of crops and ceremonies unperformed.

D. HEALTH EFFECTS OF THE LOSS OF THE TRADITIONAL TOHONO O'ODHAM FOOD SYSTEM

I just lay there awake and I think about it. The numbers of diabetics are going up and the ages are going down. People just have to wake up to what we are facing.

- Mary Antone, Tohono O’odham Community Health Representative

The most immediate and devastating effect of the loss of the traditional Tohono O'odham food system has been upon the physical health of the people. For centuries, traditional desert foods—and the effort it took to produce them—kept the Tohono O'odham healthy. The introduction of processed foods, however, changed all of that, leading to unprecedented rates of adult-onset diabetes.

As recently as the early 1960’s, diabetes was virtually unknown
among the Tohono O’odham. Today, more than 50% of the population develops the disease, the highest rate in the world. Adult-onset diabetes has even begun to appear in children as young as seven-years-old.

As a degenerative disease, diabetes causes many subsequent health problems, including kidney failure, loss of eyesight, circulatory problems and severe organ damage. In the year 2000, Arizona and Sonoran (the northern Mexico state that borders the Tohono O’odham Nation) health programs will spend $2 billion annually to treat Mexican and Indian diabetics. Similar, although marginally less dramatic, rates of adult-onset diabetes effect many other Native communities as well.

E. CAUSE OF THE DIABETES PROBLEM

_Wheat flour makes me sick! I think it has no strength. But when I am weak, when I am tired, my grandchildren make me gruel out of the wild seeds. That is food._

- Maria Chona, 1933, _Papago Woman_

The wisdom and practical knowledge of traditional peoples has often been discounted as anecdotal at best. However, when 90-year-old Maria Chona spoke these words 65 years ago, she provided an accurate assessment of the effects of nontraditional foods on the health of the Tohono O’odham.

Over the past several years, several scientific studies have confirmed what Chona already knew: traditional Tohono O’odham foods – such as tepary beans, mesquite beans, acorns and cholla (cactus) buds – help regulate blood sugar and significantly reduce both the incidence and effects of diabetes. Over the course of many centuries, the Tohono O’odham metabolism had become especially well adapted to the foods of the Sonoran Desert. As the majority of Tohono O’odham moved away from traditional foods and adopted a more “Western” diet, diabetes began to appear at an extremely high rate. Unlike the traditional foods that helped control blood sugar levels and increase insulin production and sensitivity, this new diet overwhelmed the O’odham metabolism, leading to high rates of obesity as well as diabetes. In a very real sense, the destruction of the traditional food system is literally killing thousands of Tohono O’odham.

F. LIMITED EFFECTIVENESS OF CONVENTIONAL MEDICINE

Since diabetes is a degenerative disease with no cure,
conventional Western medicine is extremely limited in its ability to effectively respond to this health crisis for Native communities. Although there are medicines that can help control blood sugar levels and mitigate some of the worst effects of diabetes, the effectiveness of these treatments is often overwhelmed by the progress of the disease.

One indicator of the limited effectiveness of conventional medicine is the number of Tohono O'odham who have experienced severe kidney damage as a direct result of diabetes. Despite the best efforts of doctors, almost one in ten Tohono O'odham diabetics are forced to undergo regular dialysis. Circulatory problems, amputations and loss of eyesight are also common among Tohono O'odham diabetics. All of this has combined to create a situation in which Tohono O'odham life expectancy in more than ten years shorter than the national average. At least as important, the richness and quality of life of O'odham diabetics is also greatly reduced.

G. Effectiveness of the Traditional Diet

The solution to the diabetes problem among the Tohono O'odham community is both extremely easy to identify and maddeningly difficult to achieve. 65 years ago, in advocating for the power of traditional foods, Maria Chona correctly identified the need for the Tohono O'odham to consume traditional foods in order to be strong and healthy. A simple return to a more traditional diet would surely be a major step in solving a health problem that is devastating the Tohono O'odham community.

Two primary attributes of traditional Tohono O'odham foods are thought to contribute to reductions in both the incidence and severity of diabetes. First, the soluble fiber, tannins and inulin in one group of traditional foods (which includes mesquite bean pods, acorns and tepary beans) helps reduce blood sugar levels, slow sugar absorption rates, and improve insulin production and sensitivity. Indeed, these foods are known to be among the 10 percent most effective foods at controlling blood-sugar levels. Second, a complimentary group of traditional foods (including prickly pear fruits and pads, cholla cactus buds, chia seeds and mesquite bean pods) contain mucilaginous polysaccharides gums that slow the digestion and absorption of sugary foods. Combined, these two categories of desert foods prevent and reduce the effects of diabetes.

As easy as this solution might appear on the surface, however, two major stumbling blocks remain. First, after decades during
which most members of the Tohono O’odham community have abandoned the traditional diet, a great deal of culturally-appropriate education, asset development and capacity building is required in order to help people to reverse this trend. Second, and perhaps more fundamental, given the extreme damage to the traditional food system — the forms of producing, distributing and preparing traditional foods — it is not obvious how a person who wants to return to such a diet would be able to do so. The Tohono O’odham Community Food System provides a mechanism for these two obstacles to be overcome.

H. CULTURAL EFFECT OF THE LOSS OF THE TRADITIONAL TOHONO O’ODHAM FOOD SYSTEM

Traditional people often use culinary customs as primary indicators of a particular culture.
- Gary Paul Nabhan, Cultures of Habitat

Farming is not seen just as an economic necessity, but as a religious duty.
- Emory Sekaquaptewa, Hopi

Destruction of the Tohono O’odham food system has led to a dramatic loss of Tohono O’odham language and cultural traditions, as equally devastating as the loss of the people’s physical health. Virtually all elements of traditional culture — ceremonies, stories, songs, language — are directly rooted in the system of food production. O’odham culture is truly an agri/culture. As a result, destruction of the traditional food system has contributed to the significant loss of many elements of the O’odham Himdag — Desert People’s Way.

One of the most sacred of these cultural practices is the saguaro wine ceremony. Designed to “sing down the rain” that makes agriculture possible in the dry desert, the saguaro harvest and the wine ceremony served as a cornerstone of O’odham ceremonial life, marking the beginning of the new year. Today, however, only a tiny portion of the O’odham community participates in this sacred rite. The reason for this decline is relatively simple: today, few O’odham produce their own food. Grocery stores and federal commodity programs — rather than the desert — are the source of food. The endangerment of this essential element of O’odham culture is the direct result of changes in the material foundation: People did not stop planting the fields because the ceremony was dying out; the ceremony began to die out when people stopped planting their fields. The
saguaro wine ceremony is but one of many examples of O'odham culture's reliance upon and connection to the traditional food system.

I. THE TOHONO O'ODHAM COMMUNITY FOOD SYSTEM

Beginning in the summer of 1996, Tohono O'odham Community Action (TOCA) initiated a community-based project aimed at redeveloping a sustainable food system within the Tohono O'odham community. TOCA sought to create a comprehensive response to the near total destruction of the traditional Tohono O'odham food system and the resulting nutrition-related disease that is devastating our community. The goal was to engage in a variety of interrelated activities such as the redevelopment of traditional flood-based farming, implementation of a desert foods collecting project, creation of family and village gardens throughout the community, creation of partnerships with schools, hospitals and other institutions, establishment of community gardens, and other activities.

Over the past four years, TOCA has accomplished a tremendous amount and developed a strong record of success. Some of these accomplishments include:

- Redeveloped traditional floodplain agriculture on a small-scale in the village of Cowlic. With four acres of traditional crops planted in the summer of 2002, this represents the first traditional agriculture project within the Tohono O'odham community in many years. This project serves as a community "laboratory" for re-learning and teaching the practical skills and processes needed for larger scale redevelopment of traditional floodplain agriculture.

- Established two community gardens (including one on the grounds of the Indian Health Service hospital in Sells) to serve as learning centers where elders, younger adults and youth can redevelop the multigenerational transfer of skills and information about the ways in which farming, gardening, collecting wild foods and hunting can be combined to create a strong and healthy Tohono O'odham food system.

- Provided technical and material support (including free traditional seeds, free fencing and use of tools) for the creation of over 60 family gardens in villages throughout the Tohono O'odham community.

- Organized dozens of trips to collect wild desert foods (e.g., desert acorns, saguaro fruit cholla cactus buds and
mesquite beans). In addition to providing families with healthy foods, these trips provided an opportunity for young people to learn the cultural importance and health benefits of these foods, as well as the practical skills necessary for collecting, preserving and preparing these foods.

- Co-sponsored and organized the Desert Walk for Health and Heritage a 250-mile walk in which hundreds of community participants ate traditional foods, utilized traditional medicines and shared their perspective on the role of cultural traditions in solving the diabetes problem that is devastating Native communities.

- Provided technical and material support for the creation of gardens at the Tohono O'odham Elderly Program, the Sells Head Start Program, the Santa Rosa Ranch School and other community programs. Provided community-based training and consultation for Indian Health Service, Tohono O'odham Nation Elderly Program, Tohono O'odham Nation Agriculture Program, Indian Oasis Primary School, Ha:sañ Preparatory and Leadership School, Tohono O'odham High School, etc.

- Developed of educational resources for use within the Tohono O'odham community about the linkages between the food system, cultural traditions and diabetes prevention, including the production of a 25-minute educational video written, directed and produced entirely by community members (a copy is enclosed).

- Redeveloped cultural traditions related to the traditional food system, including organizing the first Nawat I'i- rain ceremony - in 30 years in the farming village of Wainam Ke:k.

J. RECENT DEVELOPMENTS IN TOHONO O'ODHAM FOOD PRODUCTION:

With TOCA's efforts, traditional food production has begun a slow but steady change towards the direction of traditional food production and local food self-sufficiency. A four acre flood irrigated farm has been re-developed by TOCA on land that was last cultivated more than twenty-five years ago. It is the only flood irrigated farm currently known to project researchers that exists in the Nation. Desert adapted crops such as squash, watermelon, melon, tepary beans, O'odham corn, sorghum (locally called sugarcane), and devil's claw were all planted, and the first harvest will take place in late October. Educational efforts at TOCC are teaching people about Tohono O'odham food systems. The farm and classroom efforts are helping to raise
community awareness about the historic and current importance of agriculture to Tohono O'odham health and culture.

Major obstacles to starting any farm are the initial capital costs of land, equipment, and labor. Land and labor are two local resources that are abundant within the Nation. People have access to old fields that have been in their families for generations, and they are excited about working these fields again. The large initial cost of equipment is a more important obstacle that needs to be addressed. Historically, entire villages would join together to prepare, plant, and harvest fields during the farming season. This community structure has been gradually eroded, and now, people interested in re-developing old fields will most likely be doing it themselves or with only small amounts of outside help. A tractor and other high-cost labor-saving devices are essential for people who are clearing and preparing old fields.

TOCA's tractor and farm implement purchases is an asset to people throughout the Nation. The equipment is a community resource that can be used by anybody within the Nation interested in planting traditional crops. This past summer, which was TOCA's first to have a tractor with implements, two other fields were prepared for planting on land that has lay fallow for several years. Multiple calls from people who heard about the tractor as well as site visits with people throughout the Nation indicate there will be a continued, growing interest in growing traditional crops next summer. The tractor and skilled help from TOCA staff are encouraging people to begin the difficult task of bringing old fields back into production.

Based on survey results, many people are not aware of how traditional foods can help people stay healthier, even after the onset of diabetes. Health issues do not appear to be the driving force behind re-initiating food production since the connection between traditional foods and good health are not widely known. People are interested because they want to reconnect with activities they remember doing as children, they grew up watching their parents and grandparents doing, and in the case of younger Tohono O'odham, have heard stories about. Almost two generations of O'odham were actively or tacitly discouraged from producing and eating traditional foods. Talking with elders, especially those that were sent to boarding schools as children, a sadness is evident because of their separation with activities and foods they grew up with. There is now a desire to recover lost time. As people begin growing O'odham foods again, the
connection between traditional foods and good health, especially relating to diabetes, will become clearer.
IV. SURVEY RESULTS

A total of 128 families responded to the survey, representing an estimated 625 household members. Survey questions were divided into four major categories:

- Questions aimed at collecting demographic data such as age, sex and family structure.
- Questions aimed at learning about 1) people's current traditional foods production and consumption practices; and 2) their desired traditional foods production and consumption practices.
- Questions aimed at assessing current knowledge levels (i.e., what people know) and the needs for expanded educational efforts (i.e., what people want to know).
- Questions aimed at determining the attitudes of recipients of federal food aid toward traditional Tohono O'odham foods.

Complete results are attached as Appendix II. Below, however, are highlights and a brief analysis of some of the major findings in each of the four major survey categories.
A. Who Responded to the Survey?

1. Age of Respondents

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-16</td>
<td>60%</td>
</tr>
<tr>
<td>17-18</td>
<td>21%</td>
</tr>
<tr>
<td>36-50</td>
<td>10%</td>
</tr>
<tr>
<td>51-65</td>
<td>7%</td>
</tr>
<tr>
<td>over 65</td>
<td>2%</td>
</tr>
</tbody>
</table>

60.16% of respondents were aged 35 or younger with an additional 21.88% of respondents aged 36 to 50. The relatively young age of respondents indicates success in reaching the target audience of young people. It is important to note, however, that in Tohono O‘odham culture grandparents play a more important role as caregivers of children than in the broader U.S. culture. Thus, the responses of older people is also essential to understanding community attitudes toward traditional foods and the impact of these attitudes on the food practices of children and youth.
73.44% of respondents were women. Because they are the primary caregivers of children in the community, this means that the survey was successful at reaching the survey target audience of young families.
3. **Diabetes Rates of Respondents and Their Families**

Do you have Diabetes? Do you have a family Member with diabetes?

18.75% of respondents reported that they suffered from diabetes. 77.34% of respondents reported having at least one member of their immediate family with the disease. The extremely high rates of diabetes within Tohono O'odham families indicates the need to develop more effective prevention, disease management and treatment programs.
B. What Respondents Eat and What They Want to Eat

1. Actual Consumption vs. Desired Consumption of Traditional Tohono O’odham Foods

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Desired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Often</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td></td>
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</tr>
</tbody>
</table>

62.5% would like to eat traditional foods often vs. just 22.7% who actually do so.

More than 95% would like to eat traditional foods often or sometimes. This statistic points to: 1) a high level of unmet demand for traditional foods within the Tohono O’odham community; 2) the need to develop programs, infrastructure support and incentives for increased production of traditional foods; and 3) an opportunity for culturally-appropriate, sustainable economic development based in traditional food production.
2. Actual Consumption vs. Desired Consumption of Selected Cultivated Foods

![Bar chart showing actual vs. desired consumption of selected foods.]

- Tepary Beans
- O’odham Squash
- O’odham Corn

If traditionally cultivated crops (such as tepary beans, Ha:l squash and O’odham corn) were readily available, nearly 60% of respondents would like to eat them “often” or “daily” - more than four times the number who currently do so. Another 7% to 16% have never tried these foods and may eventually come to desire them.

Lack of sufficient supply to meet this demand argues for the development and expansion of efforts to revitalize the agricultural economy with an emphasis of the production of traditional Tohono O’odham crops. In 1930’s, the Tohono O’odham produced approximately 1.8 million pounds of tepary beans annually; in 2001 less than 100 pounds was produced within the Tohono O’odham community. With sufficient infrastructure and support, similar levels of agricultural production are possible today. Given the existence of more than 10,000 acres of ak chin cropland currently lying fallow in
traditional farming villages across the Tohono O'odham Nation, one of the key resources necessary for such a revitalization of agricultural production is already available to the community. The development of programs that provide other resources (e.g., equipment grants, start-up capital, agricultural education, market incentives) are necessary in order to make the revitalization of an agricultural economy viable.
3. Actual Consumption vs. Desired Consumption of Selected Wild Foods

![Bar graph showing actual consumption vs. desired consumption of wild foods]

Saguaro, Acorns, Cholla

Fruit, Spinach, Buds

More than four times the number of respondents would like to eat many traditionally wild foods "often" or "daily" than the number who currently do so. Another 6% to 25% have never tried these foods and may eventually come to desire them.

Lack of sufficient supply to meet this demand argues for the development and expansion of efforts to revitalize the wide scale harvest of traditional wild foods of the Sonoran Desert. In 1930's, the Tohono O'odham produced approximately 450,000 pounds of saguaro fruit annually; in 2001 approximately 1000 pounds were produced within the Tohono O'odham community. With sufficient infrastructure and support, similar levels of sustainable production are possible today without fear of over harvesting or putting unsustainable demand upon natural resources.
4. **Actual Consumption vs. Desired Consumption of Selected Hunted Foods**

More than seven times the number of respondents would like to eat many traditionally hunted foods "often" or "daily" than the number who currently do so. Another 13% to 14% have never tried these foods and may eventually come to desire them.
5. Why don't you eat more traditional O'odham foods?

The two largest obstacles to increased consumption of traditional O'odham foods are the amount of preparation time (32.81%) and their lack of availability (27.34%). This points to the need to 1) conduct education about more convenient ways of preparing the foods to supplement the traditionally labor intensive ways (e.g., use of crock pots and use of freezing instead of drying); and 2) expand the production and distribution of these foods.
C. WHAT PEOPLE KNOW AND WHAT THEY WANT TO KNOW

1. WOULD YOU LIKE TO LEARN MORE ABOUT . . .

More than 80% of people responded that they would "definitely" or "probably" like to learn more about how to cook, collect and grow traditional foods. This indicates the need for the development of culturally-appropriate educational programs related to traditional foods and health.
2. KNOWLEDGE ABOUT EFFECTIVENESS OF TRADITIONAL FOODS AT PREVENTING AND CONTROLLING DIABETES

Although 60.94% of respondents know that eating many traditional foods helps prevent diabetes, just 53.13% know that eating these foods can help keep diabetics healthier. This points to the need to educate diabetics about the ways in which diet can play a critical role in maintaining health.
RECOMMENDATION #6: INDIAN HEALTH SERVICE LOCAL PURC HASING

Given the scientific evidence that many traditional Native American foods contribute to the prevention and treatment of Type II Diabetes, IHS hospitals and clinics should be mandated (and funds should be appropriated) to purchase these foods to included in patient meals whenever they are available. The list of approved foods would be developed in cooperation with each participating tribal community to insure both nutritional and cultural criteria are used.

Benefits:

- The program would encourage a vulnerable part of the population (those already suffering from illnesses, including diabetes) to develop healthy eating habits, focusing of the foods that have kept their people and cultures healthy for generations. This would, in turn, reduce the incidence and severity of nutrition-related disease (particularly diabetes) in Native American communities.

- The program would stimulate increased production of traditional, nutritionally beneficial foods within Native communities by providing producers with an economic incentive to once again produce traditional, healthy foods. By providing a market incentive to producers in the form of IHS purchases, the economic viability of traditional food production would be increased, contributing to job creation, economic development, the redevelopment of sustainable food systems and increased self-sufficiency.
Native communities by providing producers with an economic incentive to once again produce traditional, healthy foods. By providing a market incentive to producers in the form of WIC supplemental coupons, the economic viability of traditional food production would be increased, contributing to job creation, economic development, the redevelopment of sustainable food systems and increased self-sufficiency.

RECOMMENDATION #5: NATIVE AMERICAN COMMUNITY FOODS PROJECTS

COMPETITIVE GRANTS PROGRAM

This program would provide grants to programs aimed at increasing the production, distribution and consumption of traditional, healthy foods within Native American communities. Modeled after the USDA’s Community Food Projects Competitive Grants Program, this program would increase food security by assisting Native American communities assess strengths, establish linkages, and create systems that improve the self-reliance of community members over their food needs.

Benefits:

- Helps prevent diabetes and other nutrition-related diseases by encouraging increased production, distribution and consumption of healthy, traditional foods within Native American communities, thereby augmenting other prevention efforts and reducing the costs of treatment programs.
- Contributes to increased self-reliance by supporting the redevelopment of food system infrastructures within Native American communities. Investing in the ability of individuals, families and communities to increase their own food security helps break the chain of dependency that too often plagues Native American communities.

These grants should be available to nonprofit organizations as well as Federally recognized tribes. Non-profits and community-based institutions are often the sources of innovation and solutions in Native American communities, and should be eligible for participation in all programs. Often these community-based institutions are the most effective at bringing together the public, private and nonprofit (“third”) sectors to develop solutions to the challenges facing Native communities.
appropriateness - would pay tremendous dividends in decreased rates of diabetes, dramatically reduced medical costs, and increased economic and social self-sufficiency.

Recommendation #3: Expand Grant Eligibility to Non-Profit Organizations

In many cases (e.g., Administration for Native American grants), only tribal governments are eligible to compete for funding and/or have priority over other applicants. However, many of the most effective and innovative solutions to community problems are developed by nonprofit organizations. Nonprofit organizations serve as the "Third Sector," complementing and providing a bridge between the efforts of the "Public Sector" (i.e., government) and the "Private Sector" (i.e., business). Federal granting programs should make nonprofit organizations eligible to compete on equal footing with tribal governments based upon factors such as the quality of the proposal, the comprehensiveness of the workplan, demonstrated organizational capacity, etc. Reasonable qualifications - such as Native American control of governing boards and a history of success working within the specific tribal community - should be established.

Recommendation #4: WIC and Seniors Farmers Market Nutrition Program

Congress should allocate funds to waive the matching requirement for the successful WIC Farmers Markets Nutrition Program on Native American reservations. The current required 50% cash match from tribal communities dramatically limits the program's ability to provide pregnant women, infants, children and seniors with culturally appropriate, nutritious traditional foods as a supplement to regular WIC and social security benefits. For a relatively small investment, recipients would be provided with supplementary coupons which could be exchanged for locally produced, traditional Native foods that have been demonstrated to prevent nutrition-related disease.

Benefits:

- The program would encourage the most vulnerable parts of the population (elders, pregnant women and young children) to develop healthy eating habits, focusing on the foods that have kept their people and cultures healthy for generations. This would, in turn, reduce the incidence and severity of nutrition-related disease (particularly diabetes) in Native American communities.
- The program would stimulate increased production of traditional, nutritionally beneficial foods within
peoples. Thus, prevention programs must take into account both the particular nutritional needs and unique cultural components of various Native communities, rather than seeking a "on-size-fits-all" approach.

RECOMMENDATION #1: FOOD DISTRIBUTION PROGRAM ON INDIAN RESERVATIONS

LOCAL PURCHASING

Given the scientific evidence that many traditional Native American foods contribute to the prevention and treatment of Type II Diabetes, FDIRP programs should be permitted (and funds should be appropriated) to purchase 10% of the foods they distribute locally. These foods should be traditional foods that have a proven nutritional benefit. The list of approved foods would be developed in cooperation with each participating tribal community to insure both nutritional and cultural criteria are used.

Benefits:

- The program would encourage vulnerable parts of the population (those at high risk of developing diabetes) to develop healthy eating habits, focusing of the foods that have kept their people and cultures healthy for generations. This would, in turn, reduce the incidence and severity of nutrition-related disease (particularly diabetes) in Native American communities.

- The program would stimulate increased production of traditional, nutritionally beneficial foods within Native communities by providing producers with an economic incentive to once again produce traditional, healthy foods. By providing a market incentive to producers in the form of IHS purchases, the economic viability of traditional food production would be increased, contributing to job creation, economic development, the redevelopment of sustainable food systems and increased self-sufficiency.

RECOMMENDATION #2: TOHONO O’ODHAM PILOT PROJECT

The Tohono O’odham and neighboring Pima communities have the highest rates of Type II Diabetes of any Native American tribe – the highest rate in the world. The development of a comprehensive, community-based prevention and treatment program aimed at reversing the diabetes epidemic within the Tohono O’odham community would provide a model which could be adapted to fit the specific cultural contexts of other tribal communities; success within the most extreme context would demonstrate the effectiveness of such an approach to other Native communities. Federal investment in such a program – aimed at increasing self-sufficiency, innovation and cultural
VI. RECOMMENDATIONS FOR FEDERAL ACTION

A. FEDERAL RESPONSES
Although hundreds of millions of dollars of Federal funds have been and are being directed toward diabetes prevention efforts, the rates of diabetes in Native American communities continue to skyrocket. This argues compellingly for the creation of pilot programs which encourage innovation and the creation of new prevention strategies that are culturally appropriate as well as medically sound.

B. PRINCIPLES FOR ACTION
Any proposals aimed at supporting innovative diabetes prevention efforts in Native American communities should respond to two factors:

- **Encourage Self-sufficiency** – Food assistance and nutrition programs in Native American communities have too often encouraged dependency relationships which destroy the sustainable structures that have previously supported the people. For example, although well-intentioned, the introduction of federal food programs helped devastate the traditional Tohono O’odham food system, which has led directly to a high incidence of diabetes. These programs created destructive dependency where self-sufficiency had previously existed. New programs must work to helping individuals, families and communities achieve greater self-sufficiency. Whenever possible, projects should encourage economic development and the development of a strong food system infrastructure.

- **Encourage Innovation** – For more than 40 years, rates of Type II Diabetes have been skyrocketing despite the best efforts of many Federal and tribal programs aimed at combatting this trend. Quite simply, our best efforts have not been sufficient to reverse the diabetes epidemic. The need for innovative and effective programs aimed at reducing diabetes among Native Americans cannot be over emphasized.

- **Culturally appropriate** – Too often prevention efforts fail to adequately respond to the unique cultural, environmental and historical attributes of various Native American communities. Most Native cultures developed in close relationship with their traditional food system. For the Tohono O’odham (“People of the Desert”) the ceremonies, songs and legends developed hand-in-hand with the ways of producing food in the desert just as the Inuit culture of Alaska developed in association with fishing and the sea. Food and nutrition cannot be separated from culture for Native
knowledge about the effectiveness of traditional foods at preventing and managing diabetes. The result points to the need for the development culturally-appropriate nutrition educational programs, as well as effective "how-to" education related to traditional food production, processing and preparation.

C. TRADITIONAL FOODS AND FEDERAL FOOD ASSISTANCE PROGRAMS

Survey data indicates a strong desire on the part of food assistance recipients to include traditional Tohono O'odham foods in those programs. 76.47% of food stamp recipients would "definitely" or "probably" purchase traditional foods with food stamps if they were readily available. WIC recipients overwhelmingly desire the creation of a Farmers Market Nutrition Program which allows for the purchase of traditional Tohono O'odham foods. Although just 7% of respondents receive commodity distributions (too small of a sample to be statistically conclusive), 88% of them indicated that they would like traditional Tohono O'odham foods included in the commodity distribution package. The inclusion of traditional Tohono O'odha foods in federal food assistance programs would do more than meet the needs/desires of recipients; it would also provide market incentives for the increased production of these foods and encourage dietary changes that would help combat the diabetes epidemic within the Tohono O'odham community.
V. CONCLUSIONS BASED UPON SURVEY DATA

A. HIGH DEMAND AND LOW SUPPLY

Survey data clearly indicates that there is a much higher demand for many traditional foods than the current supply can meet. This result points to several needs and several potential opportunities:

Needs:
- Infrastructure support for the redevelopment of traditional food production within the Tohono O'odham community is essential. Educational programs, technical assistance, financial assistance and equipment cooperatives are some of the forms of infrastructure development needed.
- Market development and marketing infrastructure for traditional Tohono O'odham foods is necessary. The development of markets (e.g., farmers markets, institutions markets, farm-to-school programs, etc.) will provide market incentives for people interested in engaging in the production of traditional foods.

Opportunities:
- Given the extremely high rates of poverty and lack of economic opportunity on the Tohono O'odham Nation, the high, unmet demand for traditional foods presents an opportunity for economic development. With both internal markets and potential external markets for traditional Tohono O'odham foods, agricultural enterprises represent an untapped economic development opportunity for individuals, cooperatives, non-profits and tribal enterprises.
- High levels of demand for traditional foods point to the possibility of effective diabetes prevention programs based upon culturally-appropriate nutrition education. If supplies of traditional foods were substantially increased, efforts to prevent and manage diabetes within the Tohono O'odham community through dietary changes would be substantially strengthened.

B. NEED FOR INCREASED EDUCATION

Survey data indicates a strong community desire for educational programs related to how to cook, harvest and produce traditional foods. Additionally, there is a need to increase community
2. DESIRE FOR FARMERS MARKET NUTRITION PROGRAM AMONG WIC RECIPIENTS

32.81% of respondents receive WIC coupons. Of those, 88.10% would like to receive supplemental coupons to purchase traditional Tohono O'odham foods.
D. TRADITIONAL FOODS AND FEDERAL FOOD ASSISTANCE PROGRAMS

1. UTILIZATION OF FOOD STAMPS TO PURCHASE TRADITIONAL FOODS

26.56% of respondents receive food stamps. Of those, 76.47% would use food stamps to purchase traditional Tohono O'odham foods if they were easily available.