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WHOSE FOOD SECURITY?: CONFRONTING EXPANDING COMMODITY PRODUCTION AND THE OBESITY AND DIABETES EPIDEMICS

David V. Fazzino II*

INTRODUCTION

Food security in international politics has largely been examined and prac-

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ticed as a means by which food surpluses can be distributed on a global scale to those areas that are defined as the food insecure. The US is particularly well situated within this regime as a supplier of commodity foods through a number of mechanisms, including but not limited to the World Food Program. In contrast to viewing the current food security regime in terms of production for global distribution, this paper will examine food security in terms of the health impacts of the US commodity oriented production system on Native Americans, particularly the Tohono O’odham. The Tohono O’odham Nation’s lands straddle the US-Mexico border in southern Arizona and Northern Sonora. Original data for this paper was collected for doctoral research on the Tohono O’odham Nation from 2004-2007.

This paper highlights the importance of asking “Whose food security?” in order to more holistically confront contemporary health challenges created, in part, by the current structure of food systems. First, this paper will review contemporary and historical global and US discourses of food security by reviewing current international and US food security law and policy. Second, this paper will discuss the impacts of this food system on Native Americans, particularly the Tohono O’odham, by highlighting the disproportionate increase in diseases of affluence, particularly obesity and type II diabetes, amongst these populations. Third, this paper examine historical modification of the Tohono O’odham traditional food system and will highlight the agency of the Tohono O’odham who are working within current frameworks and seeking creative approaches to confront type II diabetes. Finally, this paper will conclude with a discussion of how the efforts of the Tohono O’odham can inform more inclusive understandings of food security wherein local definitions of food and health are more fully incorporated into discussions to inform policy and law surrounding food security.

I. INTERNATIONAL FOOD SECURITY LAW AND POLICY

The UN standard definition of food security is the Rome Declaration on Food Security, a product of the 1996 World Food Summit. According to the Rome Declaration, “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” This food security conceptualization considers that adequate food must be not only produced but also distributed and consumed. This definition allows for a consideration of the preferences of people, as individuals, to access foods so that they can live active and healthy lives. It allows for a qualitative, if partial, discussion of what food security means for differently situated individuals. This definition in itself fails to specifically account for cultural factors in determining food consumption at the household and community level, however there are
several sections within the Rome Declaration on Food Security which expand the notion of food security beyond the individual, to situate food security with indigenous peoples’ approaches to economic and social development and utilization of traditional foods.\(^1\) The Rome Declaration on Food Security, like other international law, policy statements, conventions and declarations offers a broad normative framework within which governments may act “as appropri-

\(^1\) Specifically within the Rome Declaration on Food Security the following sections expand the food security concept to specifically address food security for indigenous peoples: Objective 1.1 of the Rome Declaration on Food Security states, To prevent and resolve conflicts peacefully and create a stable political environment, through respect for all human rights and fundamental freedoms, democracy, a transparent and effective legal framework, transparent and accountable governance and administration in all public and private national and international institutions, and effective and equal participation of all people, at all levels, in decisions and actions that affect their food security. To this end, governments, in partnership, as appropriate, with all actors of civil society, will where not already accomplished…(d) Recognize and support indigenous people and their communities in their pursuit of economic and social development, with full respect for their identity, traditions, forms of social organization and cultural values.”

Objective 2.3 of the Rome Declaration on Food Security states, To ensure that food supplies are safe, physically and economically accessible, appropriate and adequate to meet the energy and nutrient needs of the population. To this end, governments, in partnership with all actors of civil society, as appropriate, will…(c) “Encourage, where appropriate, the production and use of culturally appropriate, traditional and underutilized food crops, including grains, oilseeds, pulses, root crops, fruits and vegetables, promoting home and, where appropriate, school gardens and urban agriculture, using sustainable technologies, and encourage the sustainable utilization of unused or underutilized fish resources.”

Objective 3.1 of the Rome Declaration on Food Security states, To pursue, through participatory means, sustainable, intensified and diversified food production, increasing productivity, efficiency, safety gains, pest control and reduced wastes and losses, taking fully into account the need to sustain natural resources. To this end, governments, in partnership with all actors of civil society, and with the support of international institutions, will, as appropriate…(b) Promote policies and programmes which encourage appropriate input technologies, farming techniques, and other sustainable methods, such as organic farming, to assist farming operations to become profitable, with the goal of reducing environmental degradation, while creating financial resources within the farming operation; such programmes should, when relevant, build upon farmers’ own experiences and indigenous knowledge.
ate” to implement such policies at the state level. Hence although the Rome Declaration on Food Security addresses several aspects of food security for indigenous peoples, the extent to which these are implemented is left to the discretion of individual states within which the indigenous communities must continually negotiate degrees of “appropriate” sovereignty, autonomy and access to resources. The Rome Declaration on Food Security also cites other international human rights (UN Convention on the Rights of the Child\(^2\) and the International Covenant on Economic, Social and Cultural Rights\(^3\)) and environmental instruments\(^4\) as imperative to confront challenges to the realization of

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\(^2\) Objective 1.4 of the Rome Declaration on Food Security states,

To encourage national solidarity and provide equal opportunities for all, at all levels, in social, economic and political life, particularly in respect of vulnerable and disadvantaged groups and persons. To this end, governments, in partnership with all actors of civil society, will, as appropriate…(d) Give special attention to promoting and protecting the interests and needs of the child, particularly the girl child, in food security programmes, consistent with the World Summit for Children - Convention on the Rights of the Child, New York 1990.

\(^3\) Objective 7.4 of the Rome Declaration on Food Security states,

To clarify the content of the right to adequate food and the fundamental right of everyone to be free from hunger, as stated in the International Covenant on Economic, Social and Cultural Rights and other relevant international and regional instruments, and to give particular attention to implementation and full and progressive realization of this right as a means of achieving food security for all. To this end, governments, in partnership with all actors of civil society, will, as appropriate…(a) Make every effort to implement the provisions of Article 11 of the International Covenant on Economic, Social and Cultural Rights (the Covenant) and relevant provisions of other international and regional instruments.

\(^4\) Objective 3.2 of the Rome Declaration on Food Security states,

To combat environmental threats to food security, in particular, drought and desertification, pests, erosion of biological diversity, and degradation of land and aquatic-based natural resources, restore and rehabilitate the natural resource base, including water and watersheds, in depleted and overexploited areas to achieve greater production. To this end, governments, in partnership with all actors of civil society, and with the support of international institutions, will, as appropriate…(j) Promote early ratification and implementation of the United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994, and implement the Convention on Biological Diversity, 1992, the Montreal Protocol on Substances that De-
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food security. The UN Convention on Biological Diversity (CBD) also addresses food security at the genetic level.³

Although there is not an internationally recognized definition of the right to food agreed to by all States,⁶ human rights instruments have offered varying

³ The three objectives of the 1992 CBD according to Article 1 are,
the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate use of its technologies, taking into account all rights over those resources and technologies, and by appropriate funding.

According to Article 15(1) of the CBD States have sovereign rights over their resources and thus they control access to genetic resources through national legislation. Thus, the authority to control access is not guaranteed to local communities or indigenous peoples by the CBD, but this power may be granted to a community where a genetic resource is found. Under the CBD it is ultimately the State which will decide on a fair appropriation of the reward between the government and the ‘its’ indigenous peoples. However, the CBD does provide some guidelines in Article 8, which states that,

Each Contracting Party shall, as far as possible and appropriate: (j)
Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

By prefacing Article 8(j), with ‘as far as possible and appropriate’ the CBD does not require Contracting Parties to make any concessions to indigenous and local communities. Options to implement article 8(j) include granting rights to indigenous or local communities that may include: the right to control physical access and the right to control subsequent use of genetic resources (Glowka 1998). According to Glowka (1998:15),

the explicit guarantee of these rights will help individuals and communities maintain their knowledge, innovations and practices, clarify rights over access and benefits sharing and help insure that those who profit from using their knowledge and innovations share equitably and fairly the benefits from that use.

⁶ For the former Special Rapporteur on the right to food, Mr. Jean Ziegler,
[T]he right to food is the right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively
degrees of commitment to food security for differently situated individuals and groups of people. These instruments include not only the aforementioned International Covenant on Economic, Social and Cultural Rights\(^7\) but also the Declaration on the Right to Development\(^8\) and the Universal Declaration of

\[\text{and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear (Special Rapporteur on the right to food 2007).}\]

\(^7\) Article 1(2) of the International Covenant on Economic, Social and Cultural Rights states,

All peoples may, for their own ends, freely dispose of their natural wealth and resources without prejudice to any obligations arising out of international economic cooperation based upon the principle of mutual benefit, and international law. In no case may a people be deprived of its own means of subsistence.

Article 11 of the ICESCR states,

1. The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international cooperation based on free consent.

2. The States Parties to the present Covenant, recognizing the fundamental right of everyone to be free from hunger, shall take, individually and through international cooperation, the measures, including specific programmes, which are needed:

(a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources;

(b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.

\(^8\) Article 8(1) of the Declaration on the Right to Development states,

States should undertake, at the national level, all necessary measures for the realization of the right to development and shall ensure, inter alia, equality of opportunity for all in their access to basic resources, education, health services, food, housing, employment and the fair distribution of income….Appropriate economic and social reforms should be carried out with the view to eradicating all social injustices.
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Human Rights. The recently adopted UN Declaration on the Rights of Indigenous Peoples also addresses aspects of food security.

II. FOOD SECURITY LAW AND POLICY IN THE UNITED STATES.

As previously mentioned, these international conceptualizations of food security are adapted “as appropriate” by states including the United States. Food security has also been defined at the state level for consideration of national and international food security policy. One operational definition for measuring food security in the United States was formulated by the United States Department of Agriculture (USDA) (Nord et al. 2004). According to the USDA, food security is, “access, at all times, to enough food for an active, healthy life for all household members” (Nord et al. 2004). By utilizing this definition the USDA determined that, “Many U.S. households have consistent, dependable access to enough food for active, healthy living – they are food secure” (Nord et al. 2004). The US approach to food security at the international level has been developed by the United States Agency for International Cooperation and Development (USAID), which defines food security as, “When all

9 The Universal Declaration of Human Rights, Article 25(1) states,

   Everyone has the right to a standard of living adequate for health and well-being of himself and his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

10 The following articles of the United Nations Declaration on the Rights of Indigenous People address food security: Article 20 states,

   1. Indigenous peoples have the right to maintain and develop their political, economic and social systems or institutions, to be secure in the enjoyment of their own means of subsistence and development, and to engage freely in all their traditional and other economic activities.
   2. Indigenous peoples deprived of their means of subsistence and development are entitled to just and fair redress.

Article 26 of the UN Declaration on the Rights of Indigenous People states: 

1. Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.

Article 29 states,

3. States shall also take effective measures to ensure, as needed, that programmes for monitoring, maintaining and restoring the health of indigenous peoples, as developed and implemented by the peoples affected by such materials, are duly implemented.
people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life” (USAID 1992).  

The current food security policy of the United States both nationally, through the USDA, and internationally, through the USAID, focuses primarily on quantitative measures of food security in terms of physical and economic access to enough foods without consideration of actual household utilization of these foods or psychological and cultural values attached to food consumption and preparation. The former US President, George W. Bush, reflected US food security policy in his speeches. In his address to the Future Farmers of America on July 27, 2001, he noted the high importance of producing enough food to feed people in the United States and linked this to national security and freedom from international pressure (Office of the Press Secretary 2001). He stated:

It’s important for our nation to build -- to grow foodstuffs, to feed our people. Can you imagine a country that was unable to grow enough food to feed the people? It would be a nation that would be subject to international pressure. It would be a nation at risk. And so when we’re talking about American agriculture, we’re really talking about a national security issue (Office of the Press Secretary 2001).

This concern over the relationship between food security and national security by the former President is obvious considering that the United States has utilized food as a weapon; perhaps the most notable example of this is the embargo on Cuba. The Cuban embargo has forced individual families and the Cuban government to make due with fewer ties to global circuits of food production and distribution (see Funes et al. 2002). This has led to an increase in the number of policies, programs and measures to enhance food security by relying on local and national food production programs. Similarly the U.S. has

11 The USAID policy determination (USAID 1992) lists the four previous international and national definitions that were utilized in the formulation of the USAID definition of food security:

1. “Access by all people at all times to enough food for an active, healthy life.” (World Bank).
2. “All people at all times have both physical and economic access to the basic food they need.” (FAO Committee on World Food Security)
3. “Access by all people at all times to sufficient food and nutrition for a healthy and productive life.” (The Agricultural Trade Development and Assistance Act of 1990 {P.L.480})
4. “When all people at all times have access to sufficient food to meet their dietary needs for a productive and healthy life.” (USAID Bureau for Africa, 1986)

12 See e.g., SUSTAINABLE AGRICULTURE AND RESISTANCE: TRANSFORMING FOOD PRODUCTION IN CUBA. (Funes, Fernando Funes, Luis García, Martin Bourque, Nil-
have been responsible for the imposition of Coalition Provisional Authority Order 81 in Iraq, which imposes World Trade Organization friendly intellectual property rights, including potential limitations on the rights of farmers to use seeds from the previous season’s harvest (Administrator of the Coalition Provisional Authority 2004). Coalition Provisional Authority Order 81 could undermine food security for farmers who might not be able to afford seed purchases that would be required when patented material is found amongst seeds which have been saved from the previous season.  

When the operational definitions of food security are limited to measuring how much food is created and distributed then the US emerges as a superior nation in terms of its overall food security and food surpluses. At the same time the relative inability of so-called less developed countries to meet the caloric needs of their populace due to chronic or acute instability in various sectors: environmental, economic or political is described as vulnerability and reflective of their inferiority. Those in international development circles would also point to the poor transportation infrastructure in these less developed countries, which limits the distribution of food to areas that may be in the greatest need of food assistance. In the United States, the temporal unfolding of science and technology is perceived as leading directly to the continual emergence of progress. Notions of this superiority are reflected in the literature concerning food production and food security where the locus of food insecurity is again and again placed in the so-called less developed world while the United States occupies the role of provider and ‘breadbasket of the world’. The stated superiority of the US-international agro-industrial complex is intimately connected with economics and politics; it is a historically produced discourse. 

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da Pérez and Peter Rosset eds., 2002 (measures include structural measures in agriculture: the creation of basic units of cooperative production, new type state farms, distribution of coffee and tobacco land to peasant families, distribution of plots for food production, encouraging food self-provisioning, urban agriculture, agricultural production cooperatives, credit and service cooperatives.)

13 See, Rosemary Combe, Fear, Hope, and Longing for the Future of Authorship and a Revitalized Public Domain in Global Regimes of Intellectual Property, DEPAUL L REV: Summer:1171 (2003) (notes that the U.S. patent system is designed to protect investment first and as a secondary consideration it rewards innovation or creativity.); see also, e.g., CARY FOWLER, UNNATURAL SELECTION: TECHNOLOGY, POLITICS, AND PLANT EVOLUTION (Gordon and Breach Science Publishers S.A. 1994) and Cary Fowler, Policy or Law? The Challenge of Determining the Status and Future of Agro-Biodiversity, 3 J. TECH. L & POL’Y (1997), (both noting that the development of patent law as applied to plants in the U.S. was written by seed industry lawyers to protect the interests of the seed industry).


This growth oriented approach to agriculture has been particularly apparent since the challenge issued by former US Agriculture Secretary Earl L. Butz to US farmers to expand production by planting from "fence row to fence row" and to scale up operations. Indeed most farmers did answer the challenge of "get big or get out" with the deployment of this production regime in agriculture law and policy. The industrialization of agriculture has condensed the processes of production into fewer hands via market forces. In the US this reduction in the number of agricultural workers is strikingly apparent as 137 hectares are farmed by the average American agricultural worker.  

This decrease in the number of farmers and increase in the adoption of Green Revolution technologies was successful in increasing grain yields from 1.1 tons per hectare in 1950 to 2.8 tons per hectare in 1992.  

At one point in the 1970s the UN’s Food and Agriculture Organization estimated that the Earth could support 157 billion people through Green Revolution technologies.  

This technological optimism as well as the belief in the ability of the United States to act as a compassionate nation to help feed the world has remained, despite reports of decreased yields, the degradation of soils and communities throughout the US Great Plains, diminishing water supplies in the west, and chemical and genetic contamination throughout the United States. In public discourse, the United States reemerges time and again in self-congratulatory discourses as the exemplar of not only a big brother offering a less fortunate sibling assistance in time of need but also the global center of innovation. This optimism, sense of superiority and patriotism were reaffirmed in a 2007 speech by former President George W. Bush:

Millions suffer from hunger and poverty and disease in this world of ours. Many nations lack the capacity to meet the overwhelming needs of their people. Alleviating this suffering requires bold action from America. It requires America's leadership and requires the action of developed nations, as well...

We are a compassionate nation. When Americans see suffering and know that our country can help stop it, they expect our government to respond. I believe in the timeless truth, and so do a lot of other Americans, to whom much is given, much is required. We're blessed to live in this country. We're blessed to live in the world's most prosperous nation. And I believe we have a special responsibility to help those who are not as blessed. It is the call to share our

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17 Gregorgy Conko and Fred Smith Jr., *Biotechnology and the value of ideas in escaping the Malthusian trap*, 2 AgBioForum 150 (1994).


Despite this optimism and the tremendous growth in US agriculture production there are still numerous food security issues in the US. Both urban and rural populations suffer from a lack of food security as defined under international law and policy. In addition there are a number of health and nutritional disparities in the US surrounding both under nutrition and over nutrition, in some instances this may occur within the same individual who consumes an over abundance of calorie-dense, nutrient-poor foods. These health disparities are particularly apparent when examining Native American populations. The remainder of this article will highlight the need for a more reflexive approach to food security, wherein the quantities of food produced and distributed as assistance is but one in a series of metrics necessary in order to understand the ramifications of a food system focused primarily upon commodity production in order to achieve food security.

\section*{III. Health Impacts of Food Law and Policy}

Health depends upon diet as well as number of other factors. Caloric shortfall has been a major concern in the US, particularly during times of economic crisis. However, today much of the concern revolves around the overabundance of calories. The increase in the number of calories consumed in relation to caloric expenditure leads to weight. Consequently this weight gain leads to individuals becoming classified as “overweight” or “obese”. Overweight or obese persons are increasing vulnerable to a number of diseases that have been collectively referred to as “diseases of affluence”. This section will discuss the scope of diseases of affluence, particularly type II diabetes, in terms of the overall US population and Native Americans.

\subsection*{A. Diseases of Affluence in the US: Obesity and Diabetes}

From a biomedical perspective, an individual’s own decision-making regarding caloric consumption and activity levels are key factors in determining whether someone will gain weight and eventually become overweight or obese.\footnote{There are a number of metrics by which one is determined to be medically categorized as overweight or obese. One is the Body Mass Index (BMI), which is the} This has been reproduced in public health discourse which stresses
self-management and personal responsibility. Anthropologists and others have challenged the primacy of self-responsibility inherent in this discourse and instead highlighted the uneven distribution of healthy foods based on income and ethnicity. Hence, although an individual may have choices regarding food choices, those choices are limited by the physical, social and cultural environments within which individuals find themselves. As an example, an individual who relies on purchases to secure food, has a low income, lacks access to transportation and lives in a neighborhood in which fresh foods are infrequently sold will face much greater challenges in consuming high quality nutrient rich foods than an individual who attains food through purchase as well as other means, has access to transportation, has a higher income and lives near farmers’ markets, grocery stores and produce stands. Hence, narratives of personal responsibility in health discourse deflect a critical examination of food systems by failing to account for the responsibility of others to ensure the possibility of personal responsibility, in other words structural inequities limit an individual’s potential choices.

Popular media accounts have recently examined the environmental, health and societal risks posed by the vertical integration of food production. This has been illustrated most clearly in the 2004 Academy Award nominated film *Supersize Me* and in the non-fiction book and film *Fast Food Nation*. *Supersize Me* traces the path of Morgan Spurlock as he embarks on a month-long diet consisting only of items found on McDonalds’ menus throughout the United ratio of an adult’s height and weight. An individual with a BMI between 25 and 29.9 is considered to be overweight while an individual with a BMI over 30 is considered to be obese. This measure has been critiqued because it fails to account for individuals who may have a weight to height ratio which is considered overweight or obese, while at the same time having a very low percentage of body fat.


States. During the same time he measures his activity levels to mirror what the average person in the United States does for exercise. The film points out the dangers of fast-food consumption coupled with a sedentary lifestyle. Despite challenges by the fast food industry to the validity of Spurlock’s claims given his regimented diet (eat only McDonald’s three times a day and ‘super-size’ when asked), a recent study suggests a connection between fast food consumption and obesity. The study, which followed 3,031 subjects (18-30 years old in 1985-1986) for 15 years, found that, “Fast-food consumption has strong positive associations with weight gain and insulin resistance, suggesting that fast food increases the risk of obesity and type 2 diabetes.” The Fast Food Nation film based on the book by the same name provides accounts of a fictionalized fast food company’s production through the eyes of the company’s employees, associates and former employees. This film gives some indication of the dangers faced by those involved in fast food production (workers in feedlots, slaughterhouses and restaurants) and consumption. These accounts may raise awareness amongst specific segments of the population, however mere recognition of potential health consequences does not necessarily translate into actual dietary modification, particularly for those with neither the time nor monetary resources to make dietary modifications.

Despite media campaigns of public health professionals and agencies, the majority of people over 30 in the US are either overweight or obese and the prevalence of overweight or obese individuals is likely to increase. While 79% of men in the United States were overweight or obese in 2005, the World Health Organization (WHO) estimates that by 2015 87% will be overweight or obese.

24 Id.
25 Id.
27 Id.
29 Id.
30 Michael McCarthy, The Economics of Obesity: Obesity Rates are Continuing Their Relentless Climb, an Indication that Public-Health Campaigns are Ill-Equipped to Make Sure Health Advice is Heeded. But a Group of Economists Believe They can Solve the Problem--by Making Healthy Eating a Low-Cost Option. 34 The Lancet 2169 (2004).
obese. While 77% of women in the United States were overweight or obese in 2005, the WHO estimates that by 2015 83% will be overweight or obese. 88% of US deaths a year (2.12 million) are due to chronic diseases. The solution offered by the WHO is healthy diet, regular exercise and avoidance of tobacco products. High rates of obesity amongst Native Americans have been documented for some time. In 1991 when the prevalence of diabetes was 9.1% amongst men and 8.2% amongst women for the US as a whole, Native Americans had rates of 13.7% for men and 16.5% for women.

Type 2 diabetes presents a serious challenge to community health professionals worldwide as the incidence rate of diabetes continues to rise in third world countries. This will lead to an increase in the overall number of people living with type 2 diabetes in the coming decades. Currently the highest incidence rates are in developed countries such as the United States.

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31 See, e.g., World Health Organization, The Impact of Chronic Disease in the United States, Electronic document, http://www.who.int/chp/chronic_disease_report/usa.pdf, last viewed July 17, 2007 (2007); See also Yiqing Song, Joann Mason, Julie Buring and Simin Liu, A Prospective Study of Red Meat Consumption and Type 2 Diabetes in Middle-Aged and Elderly Women. 27 Diabetes Care 2108 (2004) (although diet particularly regular consumption of excess calories, is a key factor in developing type 2 diabetes, this study suggests a direct relationship between type of foods consumed, in this case increased red meat consumption, particularly processed meats, and risk of developing type 2 diabetes in women.)

32 See, e.g., World Health Organization, supra note 31.

33 Id.

34 Id.


38 Id.

39 See, World Health Organization, Prevalence of diabetes in the WHO Region of the Americas, Electronic document,
to the WHO the United States in 2000 had a prevalence of 17.7 million cases of diabetes, compared to 33 million for all of the Americas.\textsuperscript{40} In 2005, the total prevalence of diabetes in the United States was 20.8 million people or seven percent of the population.\textsuperscript{41} Of these 20.8 million people, 14.6 million were aware that they had diabetes or about 70%, while 6.2 million or about 30% had diabetes but had not been diagnosed.\textsuperscript{42} The incidence of diabetes, those who had been diagnosed with diabetes, was 1.5 million people for those over 20 years of age.\textsuperscript{43} In 2002 diabetes was the sixth leading cause of death in the United States and the total costs of diabetes were $132 billion in medical costs, disability, work loss and premature mortality.\textsuperscript{44} In addition to the high number of deaths and economic costs, individuals, families and communities all suffer from the diminished quality of life experienced by individuals who have type 2 diabetes.\textsuperscript{45} These include loss of vision/blindness, nephropathy, atherosclerosis, foot problems, neuropathy, and dialysis.\textsuperscript{46} The risk of diabetes and the health consequences associated with it are unequally distributed within the United States.

B. Diseases of Affluence amongst Native Americans: Obesity and Diabetes

Populations at high risk of developing type 2 diabetes include African Americans, Native Americans, Latinos, and Asian Americans; hence programs

\begin{flushleft}
\textsuperscript{40}See id.
\textsuperscript{42}See id.
\textsuperscript{43}See id.
\textsuperscript{44}See id.
\textsuperscript{46}See id.; see also Stanley G. Throssell, Dialysis: It has given her life but had changed her family forever, The Runner, September 7, 2007 (Dialysis may also be indicated for patients who have lost the functioning of their kidneys, currently there are 171 Tohono O’odham people who require dialysis. A new dialysis center, located in Sells, AZ, opened on August 19, 2007, and will eventually have the capacity to have 40 treatment stations); Stanley G. Throssell, New dialysis center opens with fanfare, The Runner, September 7, 2007 (Dialysis can have profoundly effects on family life for Tohono O’odham individuals).
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that target these populations will be essential in slowing the overall increased prevalence of type 2 diabetes in the US.\footnote{Karmeen D. Kulkarni, \textit{Food, Culture, and Diabetes in the United States}, 22 \textit{Clinical Diabetes} 190 (2004).} Diabetes was virtually unknown amongst Native Americans prior to 1940.\footnote{See, K.M. West, \textit{Diabetes in American Indians and other Native Populations of the New World}, 23 \textit{Diabetes} 841 (1974); see also Lorelei de Cora, \textit{The Diabetic Plague in Indian Country: Legacy of Displacement}, 16 Wicazo Sa Review 9 (2001).} The increase in levels of obesity in Native Americans has made this population more susceptible to type 2 diabetes.\footnote{See e.g., Wiedman supra note 35; see also; Knowler et al. supra note 35; et al. 1991; Thomas K. Welty, \textit{Health Implications of Obesity in American Indians and Alaska Natives}, 53 \textit{Am. J. Clinical Nutrition} 1616S (1991).} Amongst Native Americans, aged 20 and over, who receive care from Indian Health Services (IHS), 12.8\% or 99,500 had been diagnosed with diabetes.\footnote{See, Center for Disease Control, \textit{supra} note 41.} There are a total of 118,000 or 15.1\% of those who receive care from IHS that have diabetes, although 18,500 have yet to be diagnosed with it.\footnote{See id.} The highest prevalence rate for type 2 diabetes, after adjustment for age differences, is in southern Arizona at 27.6\%.\footnote{See id.}

The increased exposure of Native American youth in the southwest to factors which contribute to diabetes and subsequent weight gain\footnote{See, Knowler et al., \textit{supra} note 35.} will translate into increased levels of mortality and end-stage renal disease as this population reaches middle age.\footnote{Meda E. Pavkov, Peter H. Bennet, William C. Knowler, Jonathan Krakoff, Maurice L. Sievers, and Robert G. Nelson \textit{Effect of Youth-Onset Type 2 Diabetes Mellitus on Incidence of End-Stage Renal Disease and Mortality in Young and Middle-Aged Pima Indians}. 296 \textit{J Am. Medical Ass’n} 421 (2006).} This will lower overall quality of life for individuals suffering from the disease, impacting families and communities in which these individuals live.

Native American populations were exposed to series of new diseases and illnesses as colonial powers worked to “claim” territory in the Americas. Some of these illnesses were brought about through historical differences in exposure to disease associated with animals indigenous to the Old World. In some instances these differing rates of exposure were exploited in order to allow for colonists to delve further into Native American territories with decreased resistance. Shifts in food systems also led to an increase in vulnerability to particular illnesses.
IV. HISTORICAL MODIFICATIONS OF TOHONO O’ODHAM FOOD SYSTEMS

As part of a policy of assimilation many Native American tribes had their food systems decimated with the intention of eliminating Native Americans as unique cultural groups. This was justified through the rhetoric of efficiency wherein the food systems of Native Americans where viewed as inefficient and outsiders where providing more “appropriate and efficient” food systems.\(^{55}\) Hence food systems were refashioned to limit the mobility and autonomy of Native Americans by creating reliance upon non-Native production and distribution/exchange mechanisms in order to meet nutritional needs. These incursions and attempted modifications of the Tohono O’odham food system predated the arrival of the United States into the region.

Outsiders have, since the first contact with the Spanish, attempted to refashion the food systems of the Tohono O’odham in order to make them more “productive”. Early missionaries into the region encouraged the Tohono O’odham to settle around missions by introducing new options to food security. The Tohono O’odham adopted and modified Spanish crops and farming practices for incorporation into the food system, which had previously relied on floodwater farming, hunting and gathering to produce food. It was not until the 1940s that outside factors made the continuance of traditional styles of farming a more difficult choice or even a non-option for many Tohono O’odham individuals. These factors included: the implementation of programs designed to enhance food security amongst the Tohono O’odham through food assistance and other means, work opportunities in mining and agriculture at times of the year when attention was needed in their own fields, relocations to cities and boarding schools, and increased availability and relative low cost of purchased food items.\(^{56}\) These factors combined in varying intensities over the course of several decades to bring about a steady decline in traditional food production on the Tohono O’odham Nation. Traditionally many O’odham planted fields with the summer rains they relied upon for irrigation. These rains were brought through rituals surrounding the harvesting and consumption of wine made from bahidadj or saguaro fruit. There were an estimated 9,177 to 16,000 acres of floodwater farming on Tohono O’odham lands in the late 1910s.\(^{57}\)

\(^{55}\) See, e.g., DAVID RICH LEWIS, NEITHER WOLF NOR DOG: AMERICAN INDIANS, ENVIRONMENT, AND AGRARIAN CHANGE (Oxford University Press 1994).

\(^{56}\) See, e.g., TOHONO O’ODHAM COMMUNITY ACTION AND TOHONO O’ODHAM COMMUNITY COLLEGE, COMMUNITY ATTITUDES TOWARD TRADITIONAL TOHONO O’ODHAM FOODS (Tohono O’odham Community Action, Tohono O’odham Community College 2002).

\(^{57}\) See, e.g., Gary Paul Nabhan, PAPAGO INDIAN DESERT AGRICULTURE AND WATER CONTROL IN THE SONORAN DESERT, 1697-1934. 6 APPLIED GEOGRAPHY 43 (1986).
utilizing floodwater farming declined from over 20,000 acres in the late 1920s to 2,500 by 1949 and then to less than 25 in 2002. There were mere remnants of these floodwater fields in 1986 and only a handful of farmers who still practiced farming in this manner when the author completed his field research. With the decline in overall acreage in traditional production, there was also a dramatic decline in traditional food production. As an example, the tepary bean (Phaseolus acutifolius A. Gray) production on the Tohono O’odham Nation fell from 1.8 million pounds in the 1930s to less than 100 pounds in 2001. This decline in production of traditional foods corresponded with a decrease in the consumption of traditional foods.

V. FOOD SECURITY REVISITED

While the previous section highlighted the attempts of outsiders to refashion food systems towards meeting the needs of non-Tohono O’odham, this section will highlight the agency of Tohono O’odham, who along with scientists, are not only highlighting the importance of traditional foods in terms of health and cultural continuity, but also working to make these foods more available. For local communities and indigenous peoples such as the Tohono O’odham the food security concept as it is put into the practice in the United States is woefully inadequate to consider cultural appropriateness of foods and diseases of affluence which plague community members. TOCA has brought attention to the need to revise the concept of food security to more effectively consider the unique challenges that the Tohono O’odham face. This section will discuss the importance of traditional foods for contemporary Tohono O’odham,

58 See, TOHONO O’ODHAM COMMUNITY ACTION AND TOHONO O’ODHAM COMMUNITY COLLEGE, supra note 56.
59 See, Nabhan supra note 57.
60 See, TOHONO O’ODHAM COMMUNITY ACTION AND TOHONO O’ODHAM COMMUNITY COLLEGE, supra note 56.
61 Although floodwater farming has nearly disappeared from the Tohono O’odham Nation, traditional food production and particularly tepary bean production on the Tohono O’odham Nation has begun to rebound in the last decade. The two major farms which produce traditional foods on the Tohono O’odham Nation (San Xavier Cooperative Farm and Papago Farms) are utilizing both tractors and non-flood water irrigation to grow crops which historically relied on hand or draft power with floodwater farming. Hence the Tohono O’odham are selecting appropriate tools to allow for a revitalization of traditional foods production.
the community food security concept, the application of the community food security concept to Tohono O’odham food system or what the author refers to as traditional food security.

A. The Importance of Traditional Foods

Recent academic articles have highlighted the connection between traditional foods and health. Shifts in dietary consumption coupled with more sedentary lifestyles and concomitant health and nutritional consequences have been well documented by social scientists and others. A study in the 1970s showed that some of the traditional foods of both the Hopi and the Tohono O’odham are nutritionally superior to foods provided to these two groups through the US government’s commodity program. Many times these studies note that either assimilation or acculturation are occurring to the point where there is little recognizable of the original cultural form of food consumption. Food remains for the Tohono O’odham an essential component of identity, relationship and place.

Preliminary studies of the connection between traditional foods consumption and health indicate that the consumption of a traditional Indian diet, in conjunction with exercise, and subsequent weight loss assists in improving the condition of patients with type 2 diabetes. While O’Dea worked with Australian


65 See, K. O’Dea, Marked improvement in carbohydrate and lipid metabolism in diabetic Australian Aborigines after temporary reversion to traditional lifestyle, 33 Diabetes 596 (1984); B.A. Swinburn, V.L. Boyce, R.N. Bergman, B.V. Howard, C. Bogardus, Deterioration in Carbohydrate Metabolism and Lipoprotein Changes
indigenous peoples, Swinburn’s research was on the Pima, who are closely related to the Tohono O’odham. Swinburn’s study used traditional foods collected from the Sonoran Desert or grown utilizing floodwater farming methods. These foods were buds of the cholla cactus (Cylindropuntia acanthocarpa Knuth), fruits of the saguaro cactus (Carnegiea gigantea (Engelmann) Britton & Rose) and tepary beans. Gary Paul Nabhan, an ethnobotanist advocate for the strong connections between place, people and health, has brought this research to the attention of larger audiences. He writes,

Boyd Swinburn demonstrated in a clinical experiment at the Phoenix Indian School that a complete diet of these foods was sufficient to control diabetes without the supplemental use of medications or altered exercise regimes. Conversely, he determined that a diet consisting of convenience store foods with the same number of calories and the same fat/protein/carbohydrate ratio was all that was needed to trigger diabetes.  

Another study primarily on Pima but also on Tohono O’odham suggests that the incidence rate of type 2 diabetes may be lowered by a dietary preference for traditional foods including post-Contacts foods, when compared to an Anglo dietary preference. Pre-contact Tohono O’odham foods are high in dietary fiber and complex carbohydrates that slowly release sugar leading to a more gradual rise in blood sugar. Nabhan further notes that the, “Mucilage present in mesquite pods and cactus pads also dramatically lowers the insulin response by slowing the digestion and absorption of starches".

Over the course of the author’s fieldwork many O’odham individuals and entities expressed concern that despite decades of biomedical research little has

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69 See id. at 67; see, e.g., Paul Buseck, Tohono O’odham Agriculture and Traditional Foods: Revitalizing a Community Food System to Help Prevent and Treat Diabetes 2003 (MS Thesis, University of California Davis) (for a listing of nutritional studies on Tohono O’odham traditional foods); Wendy Hodgson, *Food Plants of the Sonoran Desert* (The University of Arizona Press 2001) (for detailed accounts of traditional foods of the O’odham).
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been done to curb ever-increasing rates of diabetes.\textsuperscript{70} At the same time mere education to describing the contours of the type 2 diabetes epidemic amongst the O’odham will not be sufficient to confront the epidemic. A recent study on obesity amongst Native American adolescents concluded by stating that, “intervention programs need to place less emphasis on convincing Native American youth of the importance of weight control, and more emphasis on enabling them to successfully modify their lifestyles to prevent excessive weight gain”.\textsuperscript{71} The Tohono O’odham are addressing type 2 diabetes not only through biomedical education and outreach efforts but also through initiatives which promote physical activity and pre-Contact traditional foods.

Traditional diets and the time and energy required for procurement and processing have been effective in maintaining the health of populations in the ecosystems within which they have co-existed and co-created.\textsuperscript{72} Although substantiated with primarily circumstantial information, TOCA and TOCC maintain that the increase in the incidence rate of type 2 diabetes began with the departure from a traditional diet to a more Western diet.\textsuperscript{73} This belief is shared by many O’odham who note the greater nutritional qualities of foods collected, grown and hunted in their homelands in relation to foods purchased in grocery stores. Indeed, one of the first anthropologists to work in the area noted the belief of a connection between change in diet and declining health with the shift to the grocery-store economy.\textsuperscript{74} During this transition from a traditional food system to one centered around the grocery store, it was not merely the diet that

\textsuperscript{70} See, Carolyn Smith-Morris, Autonomous Individuals or Self-Determined Communities? The Changing Ethics of Research among Native Americans, 66 HUMAN ORGANIZATION 327 (showing that Pima perceptions of biomedical research are not positive after 40 years of biomedical research. There are three concerns Pima have with diabetes research: 1. A cure or reasonable control mechanism will never materialize; 2. Research done by outsiders is a fake or exploitative scheme. 3. Benefits are primarily for non-Pima and non-Indian people.)

\textsuperscript{71} See, Dianne Neumark-Sztainer, Mary Story, Michael D. Resnick and Robert W. Blum, Psychosocial Concerns and Weight Control Behaviors Among Overweight and Nonoverweight Native American Adolescents, 97 J. AM. DIETETIC ASS’N 598 (2007).


\textsuperscript{73} See, TOHONO O’ODHAM COMMUNITY ACTION AND TOHONO O’ODHAM COMMUNITY COLLEGE, supra note 56.

\textsuperscript{74} RUTH M. UNDERHILL, PAPAGO WOMAN (Waveland Press 1985) (1933).
was changing but also other aspects of the Tohono O’odham lifestyle in which many O’odham were less involved in the physical activities previously required in a subsistence lifestyle.

Although the author did not specifically mention the connection between traditional foods and diabetes, diabetes was seen as connected to the issues of traditional foods by over half of the respondents in the author’s dissertation study.\(^75\) Hence, regardless of whether there is definitive biomedical proof of the relationship between decreased traditional food consumption and increased incidence of type 2 diabetes, there is: (1) A number of studies documenting the nutritional quality of food, traditional and non-traditional; (2) A belief amongst organizations in Native American communities and particularly the Tohono O’odham that there is a strong link between declining traditional food consumption and increased incidence of diabetes; and (3) The importance of diabetes as a major issue in the lives of individuals and families of Tohono O’odham.

This section has suggested that the current US paradigm of food security, which focuses primarily on quantitative measures of food security, may not meet the unique needs of Native Americans in general and the Tohono O’odham in particular as it does not fully account for the connections between the consumption of traditional foods and health.

B. Community Food Security

The Community Food Security concept offers an alternative way of envisioning and working to create food systems which can confront contemporary concerns. The Community Food Security Coalition, a California based NGO has extended the food security concept as “all persons in a community having access to culturally acceptable, nutritionally adequate food through local non-emergency sources at all times.”\(^76\)

Quite different from the internationally formulated definition of food security put forth by USAID, the Community Food Security Toolkit was developed at the 1999 Community Food Security Assessment Conference and was designed for local organizations and individuals in the private, public and third sectors.\(^77\) The toolkit provides a much broader definition of food security at the community level such that community food insecurity may manifest if any of


\(^77\) See id.
the following are present:

- There are inadequate resources from which people can purchase foods;
- The available food purchasing resources are not accessible to all community members;
- The food available through the resources is not sufficient in quantity or variety;
- The food available is not competitively priced and thus is unaffordable to low-income households;
- There are inadequate food assistance resources to help low-income people purchase foods at retail markets;
- There are no local food production resources;
- Locally produced food is not available to community members;
- There is no support for local food production resources; and
- There is any substantial level of household food insecurity within the community.\(^9\)

These criteria offer a much more realistic point of departure than US government measures for examining the current state of food insecurity on the Tohono O’odham Nation. Certainly large scale agricultural production and distribution systems are capable of offering immediate solutions for food insecurity crisis management, but as the preceding section on diseases of affluence demonstrates, these systems do not address the unique needs of indigenous peoples who have co-created the landscapes which they have historically occupied. Small scale agricultural production and distribution systems, while not as capable in short term crisis management offer the potential for long term food security by taking into account the unique nutritional needs of the populations that they serve. Critics of small scale agricultural systems as a primary means for ensuring food security point to the increasing advancements in applications of chemical, breeding and biotechnology technologies which have allowed for increasing gains in the production of foods for the ever increasing global population.

Many O’odham the author spoke with noted that knowledge of place and process provides a knowing of the overall quality of foods including taste and nutrition.\(^79\) Many O’odham critiqued food systems in much the same way that proponents of sustainable and bioregional-based agriculture would, by noting the difference in food quality between local whole foods and distant foods.\(^80\) Eating locally for some O’odham, much like for other proponents of sustain-

\(^{78}\) See id.
\(^{79}\) See, e.g., Fazzino, supra note 75.
\(^{80}\) Id.
able agriculture becomes a way to eat ‘natural’ and real eat ‘real’ foods that are not tarnished with the chemical residues typical of foods available in most supermarkets and fast food restaurants. For some, eating local also allows for a greater sense of security in a world of increasing uncertainty and potential terrorist attacks.

C. Traditional Food Security

Traditional food security, an extension of the community food security concept, draws on the rich history of indigenous peoples’ interactions with the landscape. The Tohono O’odham view food as intimately connected not only with identity but also health and well-being. Acts of procurement, preparation and sharing of traditional foods amongst the Tohono O’odham are moments of intimacy with the human and the non-human worlds.

The author’s research has shown that for the Tohono O’odham Nation traditional food security would be present if all of the following conditions were true:

- Availability of not only local and healthy foods but also traditional foods which enhance the overall health and well being of individuals and communities.
- Revitalization, redevelopment and maintenance of traditional farming systems (in the case of the Tohono O’odham this would be floodwater farming including ak chin farming) to serve as sites of interaction of individuals with their environmental companions.
- Enhancement and spread of household and community knowledge concerning traditional foods, including the knowledge of where to find these foods and how to prepare them.
- Adequate time or financial resources available to engage in procurement and preparation of traditional foods, at the household and community levels.
- Equivalence of desired consumption of traditional foods and actual consumption of traditional foods.

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81 Id.
82 Id.
83 Id.
84 Id.
VI. CONCLUDING REMARKS AND POLICY SUGGESTIONS

Since most current agriculture operations are in one way or another subsidized by the U.S. government, it is crucial to examine the recent decision-making regarding allocation of funding for agriculture in the region. The United States Department of Agriculture (USDA) favors, in terms of overall assistance given to the Tohono O’odham, an industrial approach to agriculture on the Nation. The USDA did promote what it refers to as a culturally-appropriate system to revitalize traditional cultural practices and reduce the incidence and severity of diabetes among Tribal members through a 1997 $80,000 competitive grant (Community Food Security Coalition 2004)\(^5\) and 2001 $135,000 grant both awarded to TOCA (Harrison and Bynum 2001). While these figures may sound significant it is crucial to consider the competitive nature of securing this funding for the short term as well as consider these monies in relation to the expenditure on the promotion of industrial styles of agriculture production.\(^6\)

A shift towards a food security framework in the United States would pave the way for other policy shifts which would promote the health of not only Native American Nations but also other rural communities and improperly nourished populations. The following are policy recommendations that would support and advance traditional food security:

- Restructure the US Farm Bill to shift away from mass production of commodities to a qualitative approach to food security including traditional food security which promotes health and community.
- Increase funding to institutional cafeterias to allow for on-site food production. This will allow traditional and local foods to be incorporated into meals.\(^7\)

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\(^5\) This competitive grant was through the Community Food Projects Competitive Grants Program, administered through the Cooperative State Research Education, and Extension Service of the USDA. It was established in in 1996 as a part of the Farm Bill entitled the Community Food Security Act. Total funding between the programs inception in 1996 and 2003 was $22 million to 166 programs (Community Food Security Coalition 2004).


• Include locally grown foods (including Tohono O’odham traditional foods) in federal food programs. This will allow low-income families the opportunity to access traditional foods, support local growers and the local economy.\textsuperscript{88}

• Increase and provide systematic funding at the national level to Native Americans to fund traditional food projects. Currently this funding is sporadic and requires tribal entities to compete with other communities at risk of dietary diseases such as type 2 diabetes for a relatively meager pool of resources relative to overall US food security funding.

• And for Native Nations located on the US-Mexico Border or US-Canada border grant US citizenship for all Native Americans and allow for the free flow of Natives across the international borders so that cultural and social ties and traditions can be maintained.

Much work has already been done by Native American communities towards restoring their traditional food systems, including the Tohono O’odham, Zuni, Hopi, Navajo, Anishinaabe and others.\textsuperscript{89} These current efforts and new initiatives will be fostered through a paradigm shift in US food security policy, wherein food security of Native American Nations is determined not only for but also by each Native American Nation. This shift would allow for acceptance of the aforementioned policy recommendations and will assist not only the Tohono O’odham but other Native American groups and other communities in developing their own initiatives to deal with issues related not only to diseases of affluence but also to address community concerns of cultural degradation and violence through the promotion of traditional food security.

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\textsuperscript{88} See Buseck, \textit{supra} note 69 (2002); LaDuke and Alexander (2005) (for projects and contact information regarding revitalization efforts of traditional foods and food systems amongst Native Americans).