

STATE OF SOUTHWESTERN FOODSHEDS

*A Special Publication of
Sabores Sin Fronteras,
Southwest Center of the University of Arizona
with Edible Communities*



*Edited by Gary Paul Nabhan
and Regina Fitzsimmons*

STATE OF SOUTHWESTERN FOODSHEDS

A Special Publication of Sabores Sin Fronteras/ Flavors Without Borders of
the Southwest Center with Edible Communities

EDITED BY GARY PAUL NABHAN AND REGINA FITZSIMMONS

CONTRIBUTORS

Maribel Alvarez is Public Folklorist at the University of Arizona, where she serves as Research Social Scientist at the Southwest Center. She also serves as Board Chair of Tucson Meet Yourself, Trustee for the American Folklife Center of the Library of Congress and Co-Founder of Sabores Sin Fronteras/Flavors Without Borders. She recently focused on the history and cultural memory of wheat in the Sonoran Desert for a sabbatical year in Sonora. Cuban by birth, she lives in Tucson.

Allison Barlow, MA, MPH, is Associate Director of Johns Hopkins Center for American Indian Health, and 20 years ago founded and now directs the Center's behavioral health program. Her work focuses on supporting the development of indigenous approaches to overcoming behavioral health disparities, with a particular interest in strengths-based strategies.

Eli Bernstein works as General Manager of Diablo Burger in Flagstaff while serving as the President of the Colorado Plateau chapter of the Society for Conservation Biology. He has a master's in environmental science and policy from Northern Arizona University and a bachelor's degree in agroecology from the University of California at Santa Cruz.

Jim Dyer is a co-founder of the Southwest Marketing Network, the Healthy Communities Food Systems non-profit, and past president of the Colorado Organic Producers Association. He also serves as Director of the Sustainability Alliance of Southwestern Colorado. Jim, his wife Pam and his daughter Kelsey raise sheep near Hesperus, Colorado.

Regina Fitzsimmons has been a Biodiversity Intern with Slow Food USA in Brooklyn, with Renewing America's Food Traditions and Flavors Without Borders at the Southwest Center. She is a recent graduate of the University of Arizona in non-fiction writing and agronomy. She lives in Tucson where she blogs about food.

Gary Paul Nabhan is Co-Founder of Sabores Sin Fronteras and a Research Scientist with the Southwest Center. He is also a Co-Founder of Native Seeds/SEARCH and the Renewing America's Food Traditions Alliance. He raises Mission-era heritage fruit trees and desert-adapted seed crops at his home in Patagonia. His book *Coming Home*



to Eat earned him the hilarious title of Father of the Local Food Movement from *Mother Earth News*.

Nate O'Meara is the owner-operator of Kitchen Garden Consulting. With a master's in applied anthropology from Northern Arizona University, Nate has worked as an edible landscape designer, landscape architecture instructor and botanical garden horticulturist. His work with many indigenous and traditional peoples on their traditional ethnobotanical knowledge has taken him from his home in Tucson to the Bahamas, Hopi Mesas and Northern Plains.

Kristen Speakman is a Field Coordinator and Research Associate with the Center for American Indian Health of Johns Hopkins Bloomberg School of Public Health in Albuquerque. She has also played a lead role in the Native Vision Camp in Santa Fe that brings 800 Native American youth from 25 tribes together each summer.

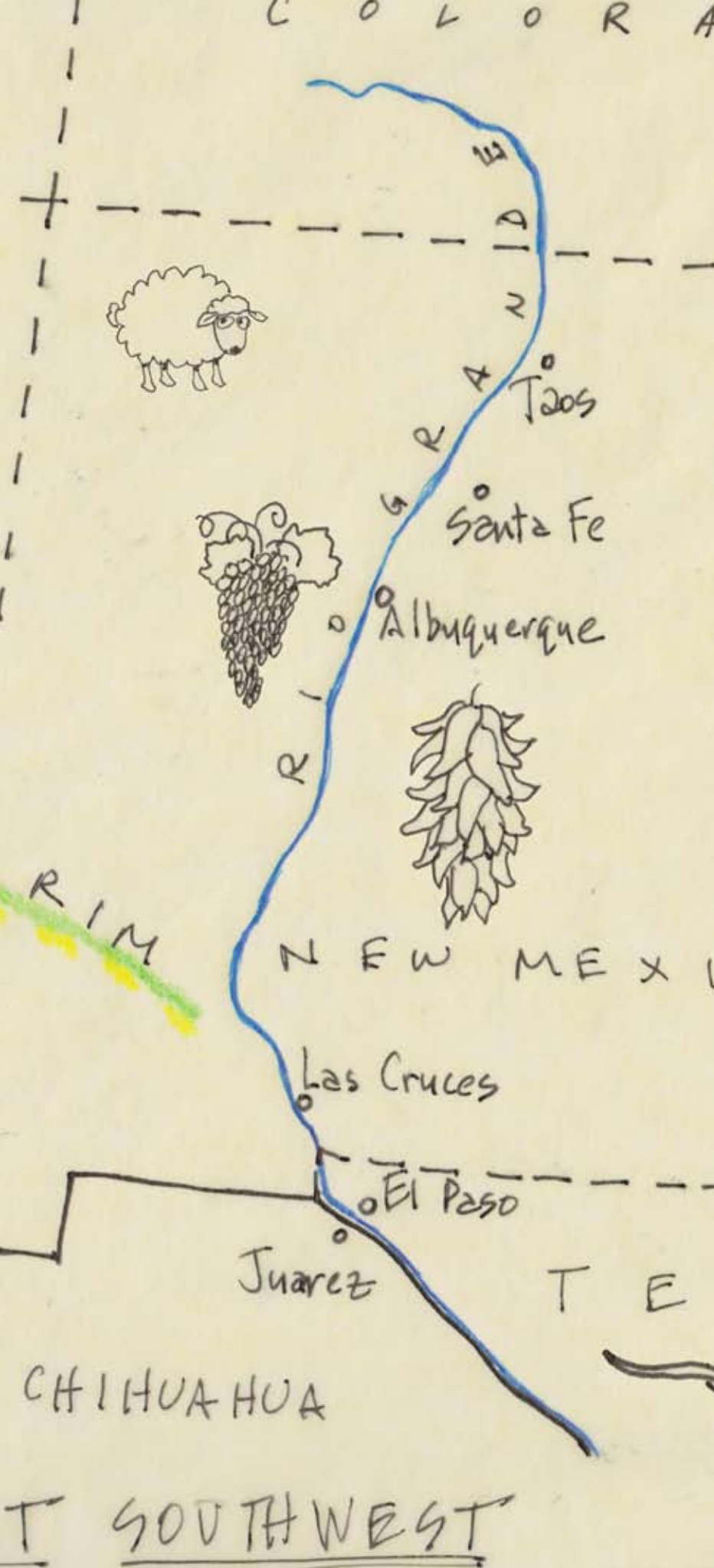
Carole Topalian is Co-Founder and Vice-President of Edible Communities, Inc, and principal photographer for the book *Edible Nation: Local Heroes from America's Sustainable Farm and Food Scene*. Her photographs have been featured in over 70 exhibits around the United States. She lives in Santa Fe.

Deja Walker has been an intern with the American Livestock Breeds Conservancy and Renewing America's Food Traditions, and the president of Slow Food NAU in Flagstaff, where she received a degree in Environmental Sciences following her time at the University of Gastronomic Sciences (UNSIG) in Italy. She now lives, bakes, teaches and gardens in the Denver-Boulder area.

Peter Warshall is the visionary behind Dreaming New Mexico, a project of the Collective Heritage Institute. One of the Southwest's foremost thinkers about water, he is world-renown for his groundbreaking writing and editing for the *Whole Earth Catalog*, *Whole Earth Review* and *Coevolution Quarterly*. He lives in Tucson and the Chiricahuas of Southern Arizona.

Kelly Watters, founding manager of the Santa Cruz Farmers' Market—cited in *Eating Well* as one of the ten best in America—now runs Somos La Semilla, a project to connect food communities in Southeast Arizona. She is a co-recipient of the Glynwood Harvest for Connecting Communities, Farmers and Food for her work with the Community Food Security Center. She lives and makes pies in South Tucson.

FOODSHEDS OF THE DESERT



FOR MORE INFORMATION

Sabores Sin Fronteras/Flavors Without Borders
attn: Gary Paul Nabhan
Southwest Center
University of Arizona
Tucson AZ 85721
520-621-5088, gpnabhan@email.arizona.edu
swctr.web.arizona.edu
www.uasouthwestcenter.org/folklore/sabores/
www.saboresfronteras.com

ART CREDITS

Photographs on cover and on pages 4, 6, 8, 11, 20, 21, 25, 26, 27, 28, 30, and 31 are by Carole Topalian.

Photographs on pages 7, 12, 14, 22, 33, and 35 are by Gary Paul Nabhan.

Photograph on page 16 is by Michele Celentano, courtesy of Diablo Burger.

Map is by Mark Middlebrook.

The mural on the cover and page TK is resident at the University of Arizona Agricultural Extension office in Maricopa County, and we thank not only their staff, but the 4-H youth who painted it.

PUBLISHER

Published by Sabores Sin Fronteras.

Copyright 2011 by Sabores Sin Fronteras on behalf of the contributing authors and artists. No part of this publication may be used without written permission of the publisher. All Rights Reserved.



CONTENTS

- 6 INTRODUCTION
- 8 THE STATE OF SOUTHWESTERN FOODSHEDS, 2000–2010
By Gary Paul Nabhan and Regina Fitzsimmons
- 9 THE LIFEBLOOD OF OUR FOODSHEDS
Water for Irrigation
By Peter Warshall
- 14 MAKING FOOD SYSTEMS WORK IN RANCHING COUNTRY
By Gary Paul Nabhan
- 16 THE BENEFITS AND CHALLENGES OF RUNNING A LOCAL FOOD RESTAURANT
By Eli Bernstein
- 18 MAP OF THE SOUTHWEST REGION
- 20 BACKYARD FARMING
The Growth of Food Production in the Urban Southwest
By Nathaniel O'Meara
- 22 ARIZONA AND NEW MEXICO FARMERS' MARKETS
Why They're Making a Comeback
By Regina Fitzsimmons
- 24 SUPPORTING THE PRODUCERS OF LOCAL FOOD AND FIBER
The Southwest Marketing Network's Decade of Impact in the Region
By Jim Dyer
- 26 COMMUNITY VISIONING PROJECT
An innovative, comprehensive approach to health and well-being for Native American Communities in Arizona and New Mexico
By Kristen Speakman and Allison Barlow
- 28 THE NEW CLASSROOM
Reshaping University Dining Halls with Local Foods
By DeJa Walker
- 30 NUTRITIONALLY ENHANCING SCHOOL MEALS AND SNACKS
What We Feed Our Youth Shapes their Health and Strengthens Rural Economies
By Kelly Watters
- 32 FROM PRAISING BORDER CUISINES TO GRAPPLING WITH BORDER HUNGER
By Maribel Alvarez and Gary Paul Nabhan
- 34 LET US HEAR FROM YOU

INTRODUCTION

While this publication began as an imaginative exercise to chart the successes and joys of sustainable food, farming and ranching initiatives in the Southwest that began over the last decade, it now appears that such innovations may no longer be a luxury, but a necessity. As this special “Edible” edition on the *State of Southwestern Foodsheds* goes to press, we have been stunned by the news coverage of a National Academy of Sciences publication

released in mid-December of 2010 arguing that “the capacity for water to support cities, industry, agriculture, and ecosystems in the US West is near its limit.” A special feature of the Academy’s *Proceedings*, which was authored by 15 distinguished scientists, suggests that the per capita amount of water currently needed to feed the populations of the metropolitan areas of the Southwest are among the highest “water/ food footprints” of any place in the world, and may clearly



Left: A mural painted by a local 4-H club for the Arizona Agricultural Extension depicts the complex interactions in the desert environment that allow it to support a wide variety of foods. Right: Big Cheese Sequoia squash making its way into CSA boxes.



be unsustainable in the face of dwindling reservoirs and aquifers, even without factoring in impending climate change. If the Southwest's human population were to ever double, and we were to use the region's land and water to try to feed those many mouths, virtually every stream and river in the region would be sucked dry. The scientists suggest that if we are to weather climate change and other impending challenges to our food security, farmers, ranchers and urban consumers in the Southwest should reduce our use of water from rivers and streams to a target level of 60 percent of what it is today.

While there are indeed mounting challenges to providing safe, secure and sustainably produced food to all residents in this region, we are nevertheless amazed by the remarkable progress in "eating lightly on the earth" that has been made over the last decade by the diverse food communities of the Southwest. This publication is intended to celebrate those local, edible success stories, and to inspire the collective problem-solving needed to make our food system more nutritious, delicious and acceptable to all who inhabit the Desert Southwest.

The development of this publication has taken place at the Southwest Center of the University of Arizona. The Southwest Center has co-sponsored the Sabores Sin Fronteras/Flavors Without Borders Foodways Alliance with the Tucson Meet Yourself—an arts and food festival that has been

managed by the Cultural Exchange Council—and by the Santa Cruz Valley Heritage Alliance. Many of the contributors were recruited from the Sabores network of food writers, scholars and activists; we have also benefitted from the dialogues fostered by the Institute of the Environment on this campus and in the region at large. The design of this publication was generously underwritten by Edible Communities, with exquisite design assistance by Cheryl Koehler, publisher of *Edible East Bay*. We thank Tracey Ryder and Carole Topalian for their leadership in forging a vital network of food communities across America through the Edible Communities Institute. We are also grateful for the support and encouragement offered by Rick and Beth Schneiders of Santa Fe, NM, Maggie Kaplan and Anne Fitzgerald of Invoking the Pause in Santa Rosa, CA, Janos Wilder of J-Bar, Janos' and Downtown in Tucson, AZ, John Sharpe of the Turquoise Room at La Posada in Winslow, AZ, Ty Fitzmorris of the Raven Café in Prescott, AZ, Derrick Widmark of Diablo Burger in Flagstaff, AZ and Agnese Haury of Tucson, AZ. Thanks to all our contributors, especially Maribel Alvarez, Sabores co-founder, for their efforts to build more healthy, inclusive and dynamic foodshed communities in this binational, multicultural region. 🌱

THE STATE OF SOUTHWESTERN FOODSHEDS, 2000-2010

BY GARY NABHAN AND REGINA FITZSIMMONS



Look back to what you ate and what you could not afford to eat at the turn of the millennium, in January of 2000. Within the last decade, tremendous changes have occurred in America's food production, distribution and consumption. Nowhere is this more evident than in the food-producing landscapes in the Southwestern borderland states of Arizona and New Mexico, where both positive and detrimental changes have occurred. These changes not only affect human health, but the health of land as well. We call these food-producing landscapes, and their relationships to the urban and rural residents they nourish, *foodsheds*.

The health of foodsheds and watersheds are in many ways analogous: Unless food and water source areas "upstream" are sustained and sometimes restored, the health and wealth of "downstream" users may be compromised. Of course, in the semi-arid and arid Southwest, since food security in our arid region is so dependent upon water availability, the fate of our foodsheds is highly dependent upon the health of watersheds. And yet, few of us go out into the field frequently enough to give them a "health check."

You are about to go on a field inspection of Southwestern foodsheds. The essays and commentary that follow this introduction are like field reports, written from various points along the Southwest's "food streams" that run from farms and ranches in the hinterlands and from gardens hidden inside cities, to food banks, soup kitchens, restaurants, college food services and school cafeterias in our metropolitan areas, villages and towns. These essays provide us with a health report of the land and people of the arid and semi-arid Southwest, and help us gauge whether various elements of our food system have improved or deteriorated over the last decade.

While we are collectively interested in the nutritional and agricultural health of the entire borderlands, from Tamaulipas and Texas to *ambos Californias*, these particular field reports focus largely on the states of Arizona and New Mexico for several reasons. These two states were both founded in 1912; they are roughly the same size and they share many geographic and historic similarities, even though there remain significant differences (See map, p. 18-19). In addition, both are located within the most arid region in the United States.

Table 1: Historic, geographic and demographic features, Arizona vs. New Mexico

	Arizona	New Mexico
Date of statehood	February 14, 1912 (48th)	January 6, 1912 (47th)
Size in sq. miles	113,998 sq mi	121,589 sq mi
Population size (2010)	6,392,017	2,059,179
Rural population size (2009) and its % of state population	668,977 (10.1)	673,686 (33.5%)
Spoken Languages	English 73%	English 82%
	Spanish 22%	Spanish 29%
	Native 5%	Native 4%
Per capita income (2008)	\$34, 339	\$33,389

Both share watersheds and foodsheds with adjacent Mexican states, and lastly, Hispanic and Native American populations who speak languages in addition to English inhabit both states.

Looking out across the varied landscapes of the Southwest, you can see that not all foodsheds are created equal. Some of these significant differences may affect how food flows through their foodsheds. Each state provides us with telling contrasts from which we can infer causes and effects. We can then use these inferences to understand and perhaps even project where certain “tipping points” are in any food system. By observing how change has occurred in one state’s food system, we may be able to become more effective “co-designers” of food courses that flow more efficiently, sustainably and healthfully. Our goal is to encourage you to become such co-designers of food flows that are more just, secure, resilient and climate-friendly, perhaps with lower carbon food-prints and nutrition-related diseases left in their wakes.

This publication has been developed and edited by team members of the Sabores Sin Fronteras/ Flavors Without Borders Foodways alliance based at the Southwest Center of the University of Arizona. It has also benefited from the insights of many food producers and consumers, non-profit organizations and for-profit food and farming businesses, as well as scholars and activists in both states. Please read the acknowledgements at the end of this narrative to see the many people, to whom we are much indebted, who took time to collaborate with us.

Get ready to run the course of several Southwestern foodsheds, learning of the successes, joys and potential perils observed along the way.

THE VIEW FROM DOWNSTREAM

Near the end of 2010, as we looked at the state of Southwestern foodsheds during a retreat held on the edge of downtown Tucson, Arizona, we saw signs of ill health in our states’ food systems. The U.S. Census Bureau released a report in September 2010 that ranked Arizona as the second poorest state in the nation, with New Mexico ranked third. More than one in five Arizonans and New Mexicans live in

THE LIFEBLOOD OF OUR FOODSHED

Water for Irrigation

By Peter Warshall

From 40 years of working in the West and from reading the Eastern philosopher, LaoTsu, I have learned that water is central to healthy and caring communities. But I, like many others, have had to learn one simple lesson again and again: water is truly the lifeblood of all vegetables, oils, grains, fruits, nuts, roots, beverages and meats that we consume. Whenever we imbibe one of the many drinks or chow down innumerable foods available in our region, the key ingredient—water—becomes our flesh and blood. In our arid land, the most apt one-liner about food and water is this: *Food security requires irrigation security.*

In Arizona and New Mexico, roughly 75 percent of all water demand is used to produce food and fiber. In Arizona, 876,000 acres receive irrigation. That’s about 73 percent of Arizona’s total cropland. In New Mexico, 830,000 acres are irrigated—roughly 69 percent of the state’s total cropland. In this region, water sources vary widely—from Rocky Mountain snowmelt to desert river diversions. In general, 50-60 percent comes from surface waters and 40-50 percent from groundwater. Our crucial irrigation need—apart from low and highly variable levels of rainfall—comes from long, hot summers that drive high rates of evaporation from our relatively shallow soils and stock tanks, as well as high rates of transpiration from our forage and food crops.

Farmers have taught me that water for growing crops is not just sucked up into plant growth. Irrigation allows farmers to extend, even out and manipulate seasons. Sprayed water prevents orchards from freezing in early winters and prevents crops like onions from early bud break during the onset of a hot spring. Water leaches salts from soils. “Carriage water” is the volume that evaporates while it moves from rivers to aqueducts and canals to the fields where it becomes “irrigation water”—the water actually applied to crops. And new forms of farming—aquaculture, hydroponic and geothermal greenhouse—all create their own water worlds. For this essay, the focus will be irrigation.

Every step, from farm to the dinner plate, says “*add water*”—to wash crops, to reconstitute concentrated juices, to manufacture tofu, pasta, syrups or jams, to cleanse meat processing facilities, to refrigerate and freeze dry and to cool the engines of delivery trucks. Even once the produce is placed on display in a grocery store, lettuce may be misted a dozen times a day. *Every forage crop, meat, fruit or vegetable product has its own specific “aqua-footprint.”*

The next 20 years of planning for food security in the face of climate change, potential fossil fuel, fertilizer and pesticide scarcity, water shortages, shifts in irrigation allocations and competitive demands will be dramatically different than what we’ve planned for in the past. Whether you heard it or not, food-and-water have given us a clarion call: *The volume of water available for crop irrigation peaked in the mid-1970s, and it is pretty clear it will never return to former levels.*

Since 1997, there has been a steady decline in the number of acres irrigated—down by 224,000 acres in Arizona and by 20,000

acres in New Mexico. The total amount of water used for irrigation per acre (with a few localized exceptions) and the levels of direct investments in water-for-food infrastructure have both declined. In the year 2007 alone, 889 farms in the two states stopped irrigating, 300 of them permanently.

Irrigation management is moving in two directions simultaneously: the industrial and the place-based, although they share many common concerns. The industrial path was blazed by interstate water development and massive investments by both public and private sectors. It has allowed farmers to grow export crops that depend upon fossil fuel- and capital-intensive inputs, especially the heavy use of fertilizers and pesticides. This trade-oriented agriculture destined for national and global markets has been the driving force of Southwestern water development since the advent of railroads. *Over 95 percent of the food grown within Arizona and New Mexico is exported beyond the boundaries of these two states.*

Likewise, over 97 percent of the food eaten by residents of Arizona and New Mexico is currently imported, even when the same food commodity could ideally be made available from in-state sources. Trade-oriented water usually comes from off-farm sources or extensive aquifers and, because of the manipulated economics, the retail price for food costs consumers less. In Arizona, off-farm surface water from gigantic waterworks is the largest source of water used in the production of food.

However, there is also a second path, more place-based, launched by the growing number of small farmers now rooted in the Southwest. They are a heterogeneous mix—retirement and lifestyle farmers, innovative ranchers, recent immigrants, permaculturists and keepers of Hispanic and Native American farming traditions—all of whom have chosen to directly market their seasonal foods through farmers’ markets, CSAs, a growing number of restaurants, school districts, roadside stands, retail groceries and co-ops. These growers did not come into their field or orchards with the same assumptions as conventional producers. They have asked a variety of “out of the box” questions: What is the importance of greater self-sufficiency compared to greater volumes of imports and exports? Should local foods be more “highly valued” than foods exported to other regions? If so, what are the water policies that best support this higher value?

Of course, water is mischievously amoral. It does not encourage or discourage a regional or global food system, a lower aqua-footprint or favor one reform over another. Water kindly accepts its fate—a fate decided by humans.

No matter how large or small, local or global, most food systems are currently under intense pressure to change. The two food-and-water paths face some common and some starkly different pressures.

New Mexico and Arizona are entangled in the largest hydraulic civilization humans have ever built. Jurisdiction and authority over water allocations require the agreement of two nations, seven states, over 30 tribes plus the federal and state agencies coordinating the Colorado, Rio Grande, Great Valley rivers of California and all their tributaries, dams, aqueducts and pumps. The vast plumbing extends from the Wind River Range in Wyoming to San Diego and Tijuana, Nogales and Tucson, and from Creede in the Colorado Rockies past Albuquerque and Las Cruces to Brownsville and Matamoros. The Central Arizona Project stretches 336 miles and pumps Colorado River diversions 2,900 feet against gravity. The Chama tunnel connects the San Juan

poverty, ranking lower than any other state in the nation with the exception of Mississippi. Their rates of poverty were significantly higher than the national average (Table 2):

The telltale signs of hunger and poor nutrition are palpable, and are typically the scars from persistent poverty. Arizona suf-

Table 2: Changes in rates of poverty in the Southwest, 2006 to 2009

	2006-2007 average	2008-2009 average	Increase
National average	12.4%	13.8%	1.4%
Arizona	14.4%	19.6%	5.2%
New Mexico	15.5%	19.3%	3.9%

From the U.S. Census Bureau, 2010

fered the greatest jump in poverty levels compared to any state in the union, and New Mexico’s jump was the third highest of any state. By 2008, approximately 329,000 Arizona households were already struggling with hunger—an eight percent increase from five years previous. But the Arizona Association of Food Banks added this caveat in a November 2009 press release:

“It is important to note the timing of the story, since the numbers do not take into account the recession’s continued impacts [since then]. In Arizona, the numbers are almost undoubtedly worse...”

Arizona ranked in the 13 worst states for household food security, and New Mexico ranked in the five worst. Both states ranked in the top six afflicted with child food insecurity as well. In addition, both states have witnessed a dramatic demand increase at their food banks and soup kitchens since 2008.

Poor nutrition sometimes generates fatter rather than skinnier people. Roughly one in every three of the region’s youth between 10 and 17 years of age are obese. New Mexico ranks 19th in childhood obesity and Arizona ranks 26th. Such high levels of obesity are undoubtedly related to the consumption of empty calories and the high-fructose corn syrup imbedded in many fast foods and carbonated beverages, but declining levels of daily exercise, genetic predisposition and many other factors may also put our children at risk. Obesity, of course, predisposes children to diabetes and heart disease.

Does the Southwest’s prevailing aridity predispose a portion of its inhabitants to poverty and hunger? Not necessarily. With such levels of failure in Arizona and New Mexico’s capacity to maintain the health and wealth of its citizens, one might wonder whether such arid, water-scarce states simply don’t have the capacity to grow adequate food to nourish their populations. However, the market value of agricultural products and the land still in productive farms and ranches in each of these states is considerable and could produce far more good food than either state’s human population would hypothetically need to feed itself (Table 3):

If the intrinsic production capacity of these two states is not among the greatest limiting factors to receiving adequate



Table 3: Arizona and New Mexico’s current capacity to produce food

	Arizona	New Mexico
Acres in farmland	26,117,899	43,238,049
Market value of state’s total agricultural products	\$3,234,552,000	\$2,175,080,000
Market value of dry grains and legumes	\$117,494,000	\$132,548,000
Market value of vegetables, roots and greens	\$865,260,000	\$88,996,000
Market value of livestock, poultry and their products	\$1,321,538,000	\$1,621,940,000

From the U.S. Census Bureau and National Resources Inventory, compiled by Farm Information Center, American Farmland Trust, 2007

food, what is? The answer to this question is likely complex, but we can find it only by moving upstream—to the working landscapes of the hinterlands—before we move back down the food course.

GROWING PROBLEMS IN SOUTHWESTERN

tributary of the Colorado to the Rio Grande.

In addition, both southern Arizona and New Mexico draw upon a series of non-rechargeable (fossil) and rechargeable aquifers. New Mexico farmers heavily use aquifers of the Basin and Range and the High Plains Ogallala, and with this groundwater, they irrigate four times more acreage than the acres irrigated by groundwater in Arizona. Eastern New Mexico, for instance, taps into the declining Ogallala aquifer, one of the world’s largest underground water reserves, that extends into eight states. Five areas in Arizona have pumped groundwater so excessively that they have been designated and are regulated as Active Management Areas (AMAs). Three of these now have limits on any future expansion of irrigated agriculture. *Groundwater is the most important on-farm source of water (measured by irrigated acres) in both Arizona and New Mexico, no matter the farm size.*

Because the giant waterworks are multi-use, water shortages lead to hot competition. In our great hydraulic civilization, water for food must compete with water for hydropower, cities, industries, power plants, recreation and habitat for endangered species. At the moment, Lake Mead on the Colorado has reached its lowest level ever: the drought that began in 2000 markedly set back the schedule for Arizona AMAs to attain sustainable groundwater pumping.

In addition, cities and power plants keep buying irrigation rights and putting farmers out of business. The state of New Mexico itself has become a “water rancher” by buying irrigation rights from Pecos farmers to meet its compact requirements with Texas. Elsewhere, law suits based on the Endangered Species Act and tribal water rights precedents have forced states to cut-back, share or pay more for the allocations provided to off-reservation farmers.

On a river basin scale, a more secure water future must reconsider the status of all of these reservoirs, aqueducts, pumps and inter-state compacts. The costs of desalinization, for instance, now equal the costs of long-distance conveyance. It is likely that desalinization (at least along the Lower Colorado and Gila) will soon become a new component of the hydraulic system.

Public financing priorities will also change, investing in projects like the placement of solar panels over the Central Arizona Project’s larger aqueducts, both to reduce evaporative losses and pumping costs. Reservoirs like Elephant Butte on the lower Rio Grande could be moved upstream into the more northerly climes at higher elevations, where they will evaporate fewer acre-feet from the surface. Other controversial ideas for increasing water supplies, such as cloud seeding, are being bandied about once again.

All of these proposals to solve water scarcity and food security lead me back to one crucially-needed change: *the re-organization of water rights to improve security, efficiency and flexibility, especially in the face of climate change.*

Providing food-and-water to any Southwestern community now poses serious challenges, some of them ethical. Can you scale up local food production using water transferred in from other basins, or extracted from fossil aquifers filled in by-gone eras, and still call your food “local”? Can “local” farmers, ranch-

ers and food processors utilize products derived from far away places—foliar sprays, feeds, nutrient supplements like algae, fertilizers, refrigeration equipment, packaging such as glass—but consider “food miles” only in terms of the transportation costs of their harvests? Foods produced in such a way are not really local and undoubtedly increase our aqua-footprints.

If a region’s residents want to incrementally become more food self-sufficient, their communities need to protect farms and water near major urban centers before they are developed for residential or industrial uses or become too expensive to irrigate. No one has comprehensively surveyed irrigable lands on urban fringes in the Southwest, with the expressed purpose of protecting irrigation with tools like agricultural land trusts or city-owned farms. However, Albuquerque citizens have passed a bond that purchases farmland along the Rio Grande so the city can lease some land back to farmers. The state of New Mexico has also passed HB 40, a legislative measure that prohibits municipalities from using their power of eminent domain to condemn a farmer’s water rights.

A “critical mass” of irrigated agriculture is needed to keep the underlying agricultural infrastructure (wells, fertilizer supplies, irrigation equipment supplies, slaughter houses and salsa processing plants) economically viable. Unfortunately, no one has assessed each foodshed to determine the amount of the irrigated acreage (and its water duty) that would be required to maintain or build up support services for regional food security.

To undertake such an enormous project would require a new orientation for both government agencies and state universities, because New Mexico and Arizona have at least 10 very different agricultural regions that require different scales and kinds of support. Arizona’s Lower Colorado basin, for instance, uses 98 percent surface water and grows vegetables, while parts of New Mexico’s Ogallala region rely on groundwater for almost 90 percent of its irrigated pastures to support dairies. In some regions, urban effluent is earmarked for agriculture, while in others it is only used for power plant cooling, parks and golf courses.

To improve security, efficiency and flexibility, some kinds of decision-making about our food-and-water future can profitably devolve to the level of governance within watersheds or agricultural regions. New Mexican acequia associations can serve as a model; they have recently won the right to reject any water transfer outside their watershed without a vote from all acequia irrigators. Some watersheds in New Mexico have even hired a water master who can ignore prior appropriation doctrine within a watershed in order to more efficiently distribute flows.

Historically, every level of decision-making—from the farm to the watershed, irrigation/conservancy district, state and federal basin—has been undermined by the “first-come-first-serve” prior appropriation laws. Existing laws do not work well with other beneficial uses such as in-stream

FOODSHEDS

Why hasn’t the good food produced by Southwestern farmers and ranchers been able to adequately feed their own neighbors in recent years? Over the last decade, several major economic pressures have increased food production and transportation costs in the Southwest, diminishing the capacity of conventional farms and ranches to produce food efficiently and cheaply. By 2009, U.S. farm income from crop production showed signs of a 10 percent decline, and livestock producers suffered an eight percent decline in receipts. Because input costs continued to rise through the end of the decade, farm debt increased for the sixth straight year. In addition, the country’s livestock herd will be smaller as of January 2011 for the fifth straight year, as the number of cattle feeding off our rangelands is declining to roughly the number we had in 1950. That means 600,000 fewer cattle will be processed in 2011, and fewer than that in 2012 and 2013 as well.

Costs haven’t merely risen for food producers; they’ve risen for eaters as well. Food expenses for families in the Southwest have dramatically increased over the last decade. The USDA projects that food prices will continue to rise faster than inflation, at roughly a two-to-three percent rate over the next decade. Some factors that have dramatically impacted our food-producing capacity are: the loss of prime farm and ranch lands, drought and diminishing supplies of water available for irrigation and livestock watering, steep increases in the cost of energy for growing and transporting food, rising costs of other farm and ranch inputs and farm labor shortages.

The recent loss of some of our best farms and ranches has surely made Southwesterners less food secure over the long haul. The 2007 National Resources Inventory reported that America has lost 23 million acres of farmland between 1982 and 2007, with 26 percent of that loss occurring in just four states—those along the Mexican border. In other words, urban development in the Sun Belt has dismantled the food production capacity of a quarter of the farmlands once found within the West—the only region



Table 4: Loss of agricultural lands and prime farmlands in Arizona and New Mexico.

	Arizona	New Mexico
Total Agricultural Land Developed Between 1982 and 2007	925,700 acres	465,300 acres
Percent of Prime Farmland Lost Between 1982 and 2007	35%	33%

Agricultural Land Trust.

Dispossessed farmers or ranchers may offer many explanations for what forced them from their land, but the discouraging consequences of drought may be a notable impetus among them. The loss of some of the most productive farm and ranch lands in Arizona and New Mexico can be related to the duration and severity of the drought. For instance, out of 3,000 cattle operations in Arizona in 1986, only 1,900 of them survived the drought all the way through 2006, resulting in an operation loss of 37 percent over two decades. The drought heightened in 1999 and 100 Arizona farms and ranches were annually sold to developers through 2002, compared to the long-running average of 82 lost per year over previous decades.

The old saying goes that you don't miss your water 'til your well runs dry. Since 2000, most Arizona and New Mexico food producers have suffered from water shortages as severe as anything experienced in the 1930s Dust Bowl and the 1950s demise of dry farming. By 2002, drought had reduced the water volume in Arizona reservoirs used for storing irrigation

supplies to only 12 to 15 percent of their normal capacity. This triggered water rationing for irrigated farmlands supplied by the Salt River Project and Central Arizona Project, resulting in 25 to 35 percent reductions in agricultural water use on central Arizona's farms. In 2004, all water levels in Colorado River and Salt River reservoirs in Arizona remained below 50 percent of their storage capacity, resulting in further shunting of irrigation water supplies to the Metro Phoenix area, the growth of which remains unbridled.

"Arid Extra Dry" may describe the last decade in the Southwest better than any other sound bite. As of April 26, 2002, the Governor of New Mexico declared a state of emergency due to region-wide drought conditions. Spring runoff and river flows in the Rio Grande watershed were only 10 percent of the running average, and the lowest in over a century. The Santa Rosa and Fort Sumner reservoirs went completely dry by July 2002. The Conchas reservoir achieved only 10 percent of its average storage, and all the reservoirs along the Rio Grande in New Mexico and West Texas failed to reach 50 percent of their average storage

that can offer year-round produce production (Table 4). Farm loss has occurred despite the incorporation of 23 land trusts in Arizona and New Mexico, which include groups that focus on the maintenance of working landscapes: The Malpai Borderlands Group, the Arizona Land and Water Trust and the Rio Grande

flows, long-term planning for urban growth, conjunctive use of surface and groundwater and drought-security storage systems. We need more local and regional "water banks" that allow farmers to sell some of their allocations to cities in wetter years without forfeiting their long-term water rights.

In the face of climate change, irrigable lands that have the most assured water supply need high priority protection—especially those near non-depleted artesian springs and channels with the best perennial flows, but are backed up by wells with rechargeable groundwater tables. Perhaps only about 10 to 15 percent of all irrigated farms in the Southwest meet such criteria, but they are disproportionately important to our long-term food security. They need to be seen together as "water and food security zones" and given special protection from land conversion, economic collapse and water transfer schemes. At the same time, farmers who temporarily switch to less water-consumptive crops need to be assured that they will not lose their water allocation. The fear of losing water rights has historically contributed to the lavish irrigation of crops like alfalfa, and has limited the diversity of crops that farmers might profitably grow.

By clarifying the true meaning of "water conservation," perhaps we will not further disadvantage certain conservation-oriented farmers. Acequia farmers, for instance, largely prefer a leaky conveyance system—one that supports riparian or wetlands habitats that keep wildlife nearby—compared to a tight conveyance system with no channel-side vegetation. Water-tight, concrete-lined canals conserve water exclusively for crop irrigation and return flows; leaky canals conserve riparian habitat. Farmers should be rewarded, not hindered, from using water in ways that conserve their state's natural heritage.

I would be remiss not to emphasize that the food choices made by individual citizens can significantly influence the destiny and ultimate efficiency of our uses of water for agriculture. For example, consuming beef produced in concentrated animal feed operations (CAFOs) may likely have an exorbitant aqua-footprint per pound of protein compared to grass-fed operations. Hypothetically, if each resident ate one fewer meal containing CAFO-raised beef per week, the Southwest might save as much as 10–15 percent of its agricultural water.

We need to vote in many different ways for a healthy, secure, efficient, safe and just food system—with our forks, ballots, our purchase of new-fangled water conservation technologies, and with imaginative marketing. For Southwestern residents striving to increase their proportion of local, seasonally fresh foods, it will remain important to navigate the balance of imports, exports and self-sufficiency, since items such as coffee, salmon and rice are never produced in the Southwest. We must work to protect the most secure irrigable lands in our foodsheds, and find ways to raise the value of place-based local foods to ensure long-term food and water security. ☞



MAKING FOOD SYSTEMS WORK IN RANCHING COUNTRY

By Gary Paul Nabhan



When Newsweek published an article in December 2007 called “Junk Food Country—Why many rural American’s can’t get nutritious foods,” I thought of many of my neighbors and friends in rural counties and on reservations in the Southwest who raise beef, lamb, mutton and goat meat. According to the Food Research and Action Center (FRAC), a third of the counties in Arizona and New Mexico have been designated “food deserts” because over half of their populations lack access to a full service supermarket with healthy food choices within 10 miles of their home.

Most of these counties are dominated by rural working landscapes, where families often travel more than 70 miles from ranch gate to store front to purchase the majority of their foods. This is both ironic and tragic, given that ranches in these counties produce much of the beef and lamb that Arizona and New Mexico contribute to the national economy. And yet, for lack of infrastructure, these ranchers, sheepherders and their neighbors have lived, sometimes for years, without adequate access to their own meats (now slaughtered and processed in distant kill plants) or other healthy foods.

It is not merely the health of families that has been diminished by these food deserts, but additionally, the health of their rural economies. Thanks to innovative economic analyses done by Ken Meter of the Crossroads Resource Center beginning in 2006, we now know the hidden costs of sending of the majority of Arizona and New Mexico’s livestock out of state for finishing and slaughtering. As Meter has calculated in a 2002 case study, 93 percent of Coconino County’s \$11.1 million in agricultural sales consisted of livestock products from cattle, sheep and goats. But in that same year, only 0.5 percent of these food products—about \$53,000—were sold by ranchers and farmers directly to in-county consumers.

During the same year, Coconino County’s households, restaurants, cafeterias and food services purchased \$37 million of red meat, poultry, fish and eggs from elsewhere—more than *three times* the amount of meat and eggs that the county’s stockmen produced. Ken Meter’s conclusions, based on these Bureau of Economic Analysis data, are sobering: Coconino County ranchers and farmers were losing \$10 million by selling their products into the national commodity markets instead of directly marketing them to their neighbors. Ranchers spent another \$6 million purchasing outside inputs for their 33,000 heads of livestock and for their forage crops. At the same time, the country’s consumers spent \$21 million that year buying food from elsewhere. As Meter summed it up, about \$231 million of potential wealth from the county’s food economy was lost each year—14 times the farmgate value of all food commodities actually raised each year in the county.

Meter has undertaken similar studies in two additional northern Arizona counties and in several New Mexico counties as well. The upshot is paradoxical: While these ranching landscapes produce plenty of healthy food, little of it reaches their residents; at the same time, vast quantities of “empty calories” are brought in from national distribution networks, with only a small portion of the value of their sales benefiting local economies.

In response to the dysfunctions in these Southwestern foodsheds,

Top and Center: Criollo cattle, including these registered Corriente Criollo from Chinipas, Chihuahua grown near McNeal, Arizona (top) and this Texas longhorn grown near Sonoita (center), are now being revived for grassfed beef not merely for use in rodeos. Bottom: Navajo-Churro sheep, a heritage breed almost lost in the 1960s, is now served by Chef John Sharpe at the Turquoise Room at La Posada every week of the year, bringing more than \$25,000 annually back into the Navajo economy.

ranchers and their allies in rural communities have undertaken three initiatives to change the trajectories of their food economies: They have started to rebuild the food processing infrastructure in rural regions, they have diversified their food products and they have marketed directly to their neighbors.

Over the last decade, ranchers have joined with civic leaders and entrepreneurs to begin rebuilding the meat processing infrastructure that virtually every rural county in America formerly possessed. The most celebrated advance in this regard has been the availability of the “Mobile Matanza” slaughter unit on wheels, which has been managed by the Tacos County Economic Development Corp since September 2006. Moving through northern New Mexico’s counties and reservations, it can process up to 80 lambs, ten cows or eight bison per site visit.

Other communities have opted to assist former game processors in scaling up to process livestock with state or federal inspection. This model has successfully been used by Perkinsville Meats in Yavapai County, Arizona, which recruited both small-scale beef and lamb producers at Canyon Country Fresh Network workshops held in Flagstaff. Much of the meat currently processed there goes to restaurants and farmers’ markets in a four-county area in northern Arizona. In Central Arizona near Winkelman, the Double Check Ranch has an on-site slaughter house that provides grass-fed, natural beef throughout a three-county area.

Ranchers and farmers have also been diversifying their food products so that commodity beef is not the only hand that they can play. For instance, Arizona ranchers are now producing beef from a broader variety of breeds than in past decades, including Angus, Corriente, Criollo, Hereford and Wagyu. But they are also producing Boer goats, Navajo-Churro, Merino, Suffolk and Cotswold sheep, as well as rabbits, alpacas and llamas. Poultry producers are finding niche markets for Barbary ducks, Black Spanish and Naragansett turkeys, Coturnix quail, guinea fowl, geese and other minor breeds. New Mexico ranchers are also producing alpacas and llamas, along with Large Black Hogs, Boer, Nubian, LaMancha and Dwarf Nigerian goats and Shetland sheep. New Mexico poultry producers have found their niche markets for American Bronze, Bourbon Red, Slate, Midget White and Narragansett turkeys and Jersey Giant, Wyandotte and Dixie chickens.

There are several food success stories of diversification within Southwestern cattle country. One has been Dennis and Deb Moroney’s inclusion of Navajo-Churro sheep, Boer goats, Criollo cattle, Arbequina and Mission olives and mesquite flour in their food production on the 47 Ranch near McNeal, Arizona. Another has been Kit Metzger’s greenhouse production of greens and other fixings grown on the Flying M Ranch for Diablo Burger, a Flagstaff restaurant described on page 16 in this report.

The most dramatic change in the region over the last decade has been the remarkable increase in the direct-marketing of beef, lamb, goat, bison and poultry products under so-called eco-labels for niche markets. Despite admonitions by the American Farm Bureau Federation that the use of labels like “grass-fed,” “natural,” “antibiotic and hormone free” and “organic” might pit ranchers against ranchers, over 100 livestock and poultry producers have decided to use such labels to differentiate their products and have gained more income by doing so. There are at least 58 Arizona livestock and poultry producers now engaged in direct-marketing through venues such as www.localharvest.org, and 52 New Mexican producers are doing the same. In Arizona, at least 13 livestock producers were marketing their meat as grass-fed by October 2010, and in New Mexico, 34 labeled their meat as grass-fed as well.

Such locally-oriented, direct-marketing efforts have not occurred in isolation. They have been supported by organizations such as the American Grassfed Association, the Southwest Grassfed Livestock Alliance, the Quivira Coalition, Baja Arizona Sustainable Agriculture and Sabores Sin Fronteras Farming, Ranching and Foodways Alliance. While direct-marketed, eco-labeled meats remain only three to five percent of total national meat sales, they are one of the most rapidly-growing segments of the meat industry. During an era when the economic downturn has reduced the profit margins for many food producers, these preliminary innovations are providing some farmers and ranchers with diversified revenue streams, thus giving them a modicum of resilience in the face of uncertainty. ❧

levels. As a result, groundwater pumping increased on farms in many parts of New Mexico, leading to severe overdrafts.

“Meteorological droughts,” as weather forecasters have coined them, may be temporarily behind us, but hydrological and agricultural droughts have not yet abated. Even though substantial rainfall events have returned to the watersheds of both states, Lake Mead nevertheless recorded its lowest levels ever in 2010, 73 years after it was initially filled. Although it had reached its full capacity again in 1998 when its surface sat at 1,215.95 feet above sea level, by November 2010 it had diminished to 1,082.56 above sea level. A lowering of only eight additional feet in Lake Mead will trigger water-delivery rationing for Lower Colorado River Basin users in Arizona, California and Nevada.

Despite the fact that many Arizonans and New Mexicans proudly claim to be dwellers of the desert, we often try to grow our food as if the desert no longer exists. The levels of water and energy required for Arizona agriculture remain extraordinarily high compared to other states. In 2009, a team of Northern Arizona University environmental engineers estimated that for 900,000 acres of food, fiber and forage production in Arizona, 4.9 million acre feet of water is annually used for irrigation, and 1.204 MW of energy is used for field preparation, planting, weeding, harvesting and other on-farm tasks—an equivalent of 38,652 tanker trucks of gas consumed per year. The luxury of using so much fossil fuel (and water) in Southwestern agriculture may soon become a thing of the past, since crude oil prices have jumped from \$27.39 a barrel in the year 2000, to \$78.80 in 2010. In 2011, crude prices are projected to begin at \$85.17 a barrel, roughly three times higher than they were in 2000.

Water and energy are like Siamese twins of the Southwest; they can’t be easily separated. Electrical energy is used on most farms and its cost has also been affected by drought conditions, particularly in areas where its generation is linked to hydroelectric dams on the Colorado River or Rio Grande. By 2004, the Navajo Generation Station on Lake Powell near Page, Arizona was so adversely affected by lowered water levels in the reservoir, that it proposed a \$20 million dollar construction retrofit to ensure that 9.8 billion gallons a year would be

THE BENEFITS AND CHALLENGES OF RUNNING A LOCAL FOOD RESTAURANT

By Eli Bernstein

If I look out across the counter of our restaurant on any particular day in Northern Arizona, here is what I might see: Three attorneys in suits. Two ranchers discussing cattle prices. A family of five with an infant asleep in a stroller. One Navajo teenager with headphones clamped around his neck. A table full of marathon runners with hungry eyes. What are these people doing together in a restaurant the size of my living room?

Eating burgers, of course! Not just any burgers, but healthy, locally-produced burgers recently featured in *USA Today's* list of the 51 greatest burger joints across the USA.

Welcome to Diablo Burger where the slogan, “all about local,” is a reference to a menu featuring hormone- and antibiotic-free, range-fed beef burgers made from livestock raised in the Diablo Canyon Rural Planning District just outside Flagstaff. Range-fed beef is Northern Arizona’s number one agricultural commodity and is rated among the least input-intensive forms of food production in America today.

Among the many roles they play, restaurants are social hotspots. On a daily basis they bring people together like no other business can. Today, more and more conversations about community politics and events are shared over “local” food. Nationally, the phenomenal growth in “local food” is big news in the restaurant industry. One national survey of 1,800 restaurants identified among the hottest, new trends: a sense of pride in locally grown produce, locally produced wine and beer and locally sourced meats, with sustainable production as an underlying theme in all of these categories.

Of course, several things influence whether or not a restaurant can successfully market and use local foods. Among these determining factors are: The relative ease of access and the freshness of the foods a restaurant owner can acquire from the surrounding region; their savviness in utilizing and marketing these unique ingredients; and the costs associated with all of the above (including the carbon “food-print” created by the chosen mode of transport for delivering the ingredients). All things being equal, we are likely to see more restaurateurs follow the example of “early adopters” into the local food domain of Arizona and New Mexico. The sustained national growth in farmers’ markets (16 percent in the last year and 114 percent increase over the last ten years) is but one of several indicators that the local food trend is not likely to go away soon.

And in these difficult economic times, let’s not forget that the restaurant industry creates jobs. In New Mexico in 2008, there were approximately 2,913 eating and drinking places, employing 83,000 people—10 percent of the state workforce. In Arizona, during the same year there were approximately 8,917 eating and drinking places, employing 256,200 people. Restaurant and foodservice jobs represent 11 percent of the state’s employment and a projected increase of 14.4 percent is expected by 2020. “Food service” (serving as a loose proxy for the restaurant industry) is the third largest industry in the state of Arizona behind “sales” and “office/administration.”

Local food restaurants appear to be increasingly popular in Ari-



zona and New Mexico. However, no agency or organization appears to be tracking the local foods restaurant industry on either the state or national level. My best guess is that there are only 33 such restaurants serving the Arizona’s six-and-a-half million residents and 30 to 35 million annual tourists. It appears that New Mexico’s two million residents and 12 million annual tourists can choose from 43 restaurants featuring local food on their menus and in their ads.

If local food restaurants are as hot a trend in the industry as they appear to be, why don’t we see more of them? While many factors are surely at play, I suspect a major reason is the most obvious: It’s a difficult, tricky business. The fiscal challenge of running a successful restaurant—nearly 90 percent of restaurants “fail” within their first year of operation—compounded by the unique challenges of building a menu around local (and mostly seasonal) ingredients, demands an innovative set of skills from proprietors, managers and chefs. What’s more, in an industry with razor thin margins, it can be risky to try something far outside the box.

In the two years since Diablo Burger has opened, I’ve learned almost everything I presently know about the restaurant business. I’m still a beginner. But it helps that I am drawn to, rather than repelled by, the unknown—maybe it’s the scientist in me. Reflecting on our initial successes at Diablo Burger (we have been featured in dozens of publications in addition to *USA Today*) I will offer a few take-home points for those of you engaged in or considering local foods restauranting:

Trust: It means everything in the formation of a new business. Derrick Widmark, the primary owner of Diablo Burger, conceived of the restaurant in 2007 while working as communications coordinator for the Diablo Trust. The consumer demand for local, range-fed beef had been recently documented in a survey conducted by the Center for Sustainable Environments at Northern Arizona University. According to its 2004 poll, 71 percent of Arizonans who valued

range-fed beef were willing to pay more for it because it ensured that their meat was more traceable; they knew it to be safely and locally produced. This fact was one of many that encouraged Widmark to open Diablo Burger. But it was the trust that Diablo Trust and Widmark had for one another that ultimately convinced ranchers that marketing a small percentage of their beef to the restaurant was a good idea. In our neighborhood, our friendship with Paul Moir, owner of Brix—another award winning local foods restaurant in Flagstaff—led to the invitation to buy from McClendon’s Select—a grower of organic, local produce much sought after by local restaurants. As a local foods restaurateur, you must invest significant time and energy into building relationships with producers that engender real trust.

Terroir: I eat a hamburger five days a week and still experience a Pavlovian response each time I smell my lunch on the grill. The quality of this beef is truly amazing. It embodies the resinous, muscular terroir of our high elevation grasslands and forests. Part of our success at Diablo Burger is due to the fact that we stay focused on what we do best: burgers. We commit ourselves to feature the foods from our foodshed that are exceptional; we honor the tradition of a taste of place (terroir) and we have compelling stories of land stewardship associated with our product.

Equity: At Diablo Burger we believe that local food should be accessible to everyone; thus our hallmark is the hamburger, a food nearly everyone can enjoy and afford. We also believe that the true cost of food is quite often undervalued by our globalized food system and that the local food movement must correct this mistake. That means restaurants must be willing to pay producers and employees what their food is worth and consumers must be willing to pay more for better food. Conveniently, this directly benefits our local communities; research has shown that every dollar spent in Arizona’s restaurants generates an additional \$.99 in sales for the state economy. By paying the true cost of food we are really investing in a better future for everyone. 🌱

more readily available to run its turbines. The cost of this construction project were to be split among the rural and urban electricity users serviced by the Salt River Project, Arizona Public Service and four other co-owners of the Navajo Generating Station. Since 2007, New Mexico’s commercial electricity costs have gone up 19 percent, while Arizona has averaged a 24 percent increase over the last several years.

Many ingredients go into making our food. The costs of these additional inputs to food production have dramatically increased over the last half decade. Between 2006 and 2008, the price of feed corn almost doubled, reaching an unprecedented \$5 a bushel, due as much to drought as to the demand for corn in ethanol production. Arizona’s first corn-based ethanol plant was built in 2007 in Pinal County, and New Mexico had its own ethanol plant using grain sorghum by 2007 as well. But a second plant scheduled to be built in New Mexico by ConAgra and its partners was scuttled in 2008, due to prohibitively high corn prices.

Growing food requires human resources—ones with hearts and souls—as much as it takes natural resources. One unforeseen vulnerability that has plagued Southwestern farmers and ranchers this last decade has been a rural labor shortage throughout the borderlands. The scarcity of farm workers for irrigated vegetable fields around Yuma County, Arizona and Imperial County, California first surfaced in 2004, when the required 3,500 green-card workers needed for the usual magnitude of hand-harvested crops did not become available through labor brokers recruiting on the other side of the border.

By 2006, labor contractors around Yuma, Arizona reported a 30 percent shortage of farmers available for the winter vegetable harvest, so growers planted 15 percent fewer acres of lettuce and other crops to hedge their bets. New Mexico’s chile pepper farmers have also complained of farm worker shortages since 2006, which dramatically affects their capacity to hand-harvest long green chiles and cayenne peppers. The shortage in farm workers has affected as many as 10,000 acres of New Mexican peppers that are typically hand-harvested, forcing farmers in these parts to consider switching to vegetable varieties that can be harvested mechanically. It appears that Arizona’s heated debate over immigration has forced many of its farm laborers to leave the state—including both legally-authorized and illegal workers who were born in Mexico—further exacerbating labor shortages in Arizona compared to those in New Mexico and California.

Sometimes a crisis triggers creativity and innovation; scarcity may be the mother of invention in the Southwest. Due to a decade of rising costs and diminished incomes, some farmers and ranchers have shifted their production strategies in an attempt to improve their bottom lines. For example, there has been dramatic growth in certified organic agricultural production in both states (Table 5). For years, New Mexico has been far ahead of Arizona in its interest in promoting the production of organic fruits, vegetables and hay, but recent growth in this sector in Arizona has been fast-paced. As discussed in the next section, farmers and ranchers across the Southwest are increasingly experimenting with alternative strategies of production that not only cut the costs of inputs and transportation, but place their products in niche markets where they have higher returns on their investments.

BRINGING
US OUR
DAILY
BREAD IN

SOUTHWESTERN FOODSHEDS

For us to receive our daily bread, food must move beyond the field, orchard or pasture to our kitchens and institutions. But both Arizona and New Mexico have lost most of their historic infrastructure for processing, packaging and distributing their own food products to their own residents. Take meat slaughter and processing: Arizona has but one sizeable kill plant and

Table 5: A decade of growth in organic production in Arizona and New Mexico

	Arizona	New Mexico
2000 Number of certified organic operations and acreage	6 operations 168 acres	123 operations 40,826 acres
2008 Number of certified organic operations and acreage	77 operations 29,248 acres	197 operations 359,310 acres
% change in operations	12.8 X	1.6 X
% in acres	174 X	74 X

FOODSHEDS OF THE DESERT SOUTHWEST IN THE U.S./MEXICO BORDERLANDS

Although food production in this region is highly dependent upon water for irrigation from the Rio Grande and Colorado River, other factors also influence the state of Southwestern foodsheds: proximity to the frost-free winter vegetable industry of Northwestern Mexico, to seafood from the Sea of Cortez and supply chain hubs of Los Angeles and Denver. Nevertheless, as this map shows, there are a number of heritage seeds and breeds uniquely adapted to this arid and semi-arid region (map courtesy of Mark Middlebrook, CruForge, www.cruforge.com).

MAP LEGEND

Cactus fruits and pads



Long green chiles



Citrus



Blue corn



Medjool dates



Fish and shellfish



Grapes and wine



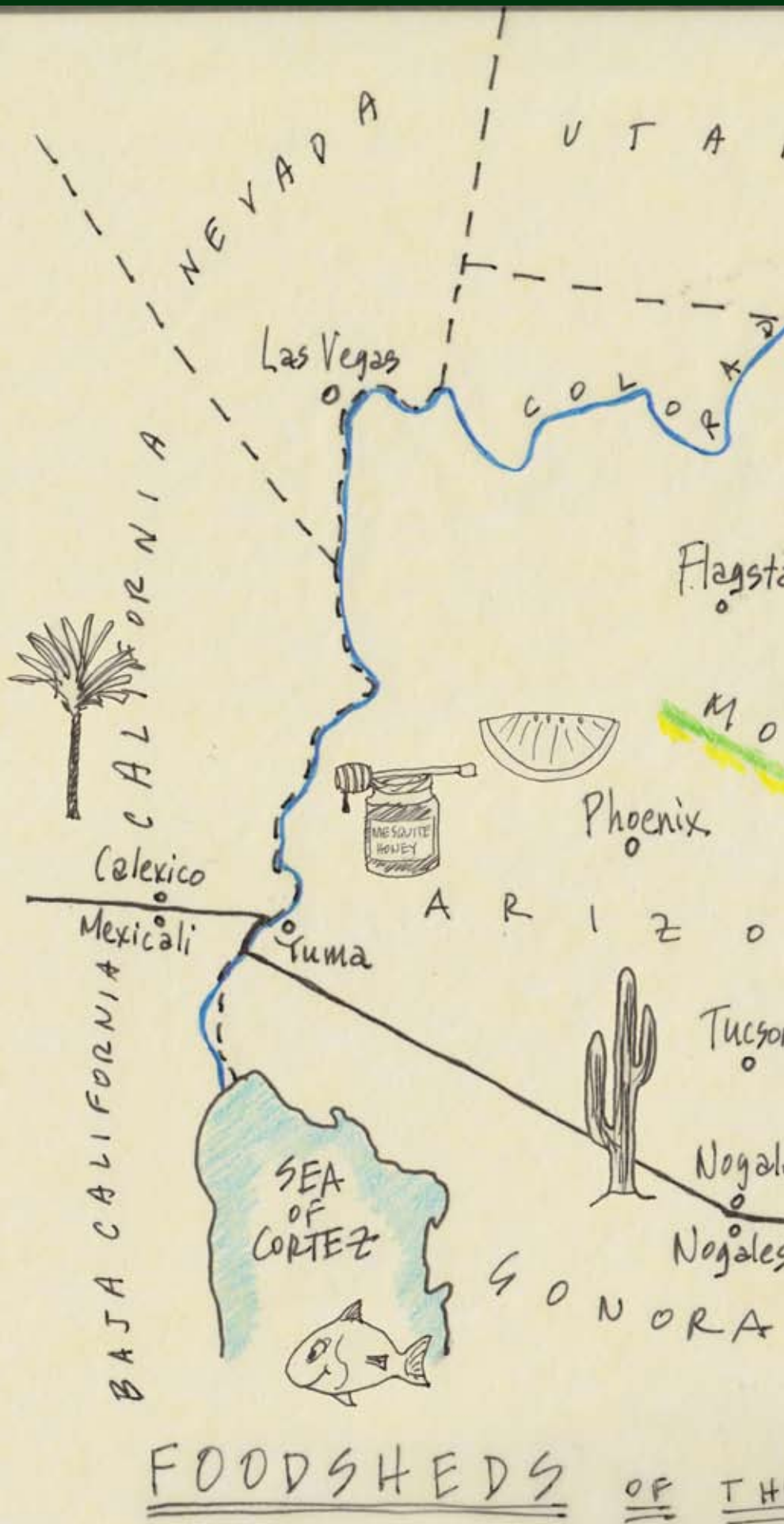
Texas longhorn cattle

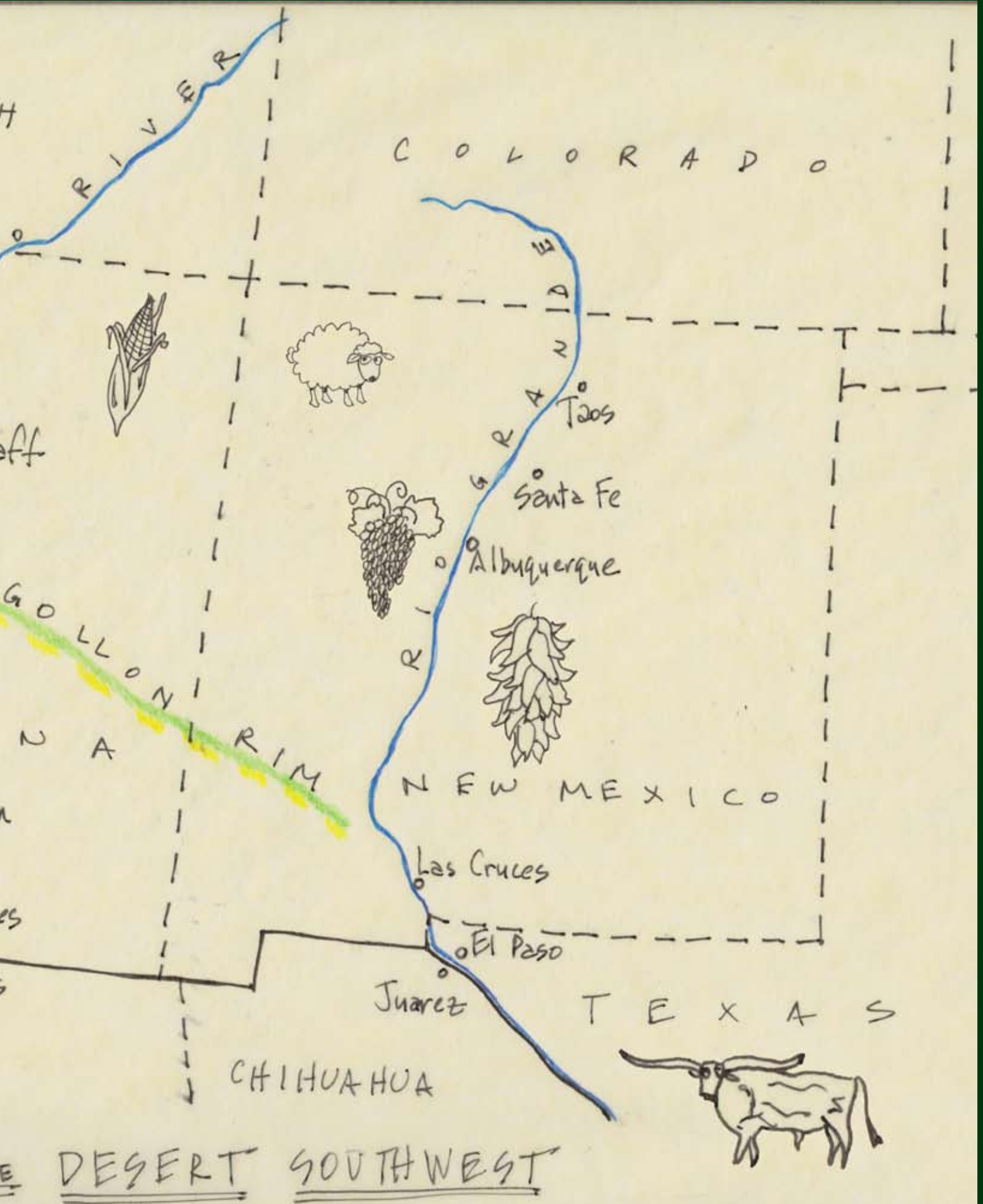


Mesquite pods and honey



Navajo-Churro lamb







BACKYARD FARMING

The Growth of Food Production in the Urban Southwest

By Nathaniel O'Meara

Recently, on a warm October morning, I walked along the Rillito River near my family's home in the Old Fort Lowell Neighborhood of Tucson, Arizona. As I looked across the dry and eroded river bottom, lined with a few water-stressed cottonwood trees, I imagined how this portion of the river supported agricultural communities for millennia. Before our growing (and thirsty) urban population pumped groundwater, forever altering the landscape, the once-persistent river was diverted—first to feed Hohokam, then Tohono O'odham and later, Mormon, Anglo and Hispanic fields of corn, beans, squash and other arid land crops.

From Albuquerque to Phoenix, New Mexico and Arizona's large urban centers all share a similar history: Each metropolitan area started as a small, rural community situated along reliable waterways with access to some of the most fertile soils in the Southwest. However, as towns grew into cities, water tables dropped, fields turned into suburban lots and increasing property taxes pushed farmers further from the city. Today, the majority of Arizona and New Mexico's city dwellers are no longer directly involved in the planting, tending and harvesting of their own food. However, through a combination of economic hardships, growing awareness of sustainable agricultural practices

and a desire to reconnect with the outdoors, a new kind of farmer is budding in the urban Southwest.

Following the national trend, over the last decade a growing number of Arizonan and New Mexican gardeners have converted their ornamental gardens into edible landscapes. Self-identified as "urban homesteaders," "kitchen gardeners" or "backyard farmers," more and more people are reconnecting with where their food comes from—whether by growing herbs, vegetables and fruit trees or raising chickens, bees and miniature livestock in their backyards.

Other kitchen gardeners who lack sufficient space, or who live in apartments and rental properties, are instead joining neighborhood community gardens. Utilizing land lent by a church, school or private landowner, community gardens provide plots, water and tools for individuals and families to grow produce for a small monthly fee. Throughout the Southwest, memberships in such programs have grown over the last 10 years. The American Community Gardening Association Bi-National Database lists 17 community gardens in the Phoenix and Tucson area—12 of which have come from the efforts of Community Gardens of Tucson to establish a network of plots

throughout the city. Although only two Albuquerque gardens are officially listed in the national database, several others can be found tucked away in residential neighborhoods across the city.

As new soil turns in private backyards and community gardens, similar trends are occurring in schoolyards across the Southwest. The expansion of outdoor classrooms on K-12 and college campuses is creating unique, educational experiences that reflect the interests, needs and demographics of the student body they serve. For example, the Native Movement of Arizona's Urban Lifeways Project operates a summer internship program hosted at a local high school in Flagstaff, Arizona. This student-led garden aims to connect Native American youth with their cultural heritage and the natural environment while living in an urban setting. By incorporating traditional teachings into the curriculum, students are not only growing traditional foods and creating public art but they are also developing the skills needed to be a leader in their communities.

Just a few blocks south of The Urban Lifeways' garden, Students for Sustainable Living and Urban Gardening or SSLUG has created another model of a food-centered outdoor classroom on the Northern Arizona University campus. Founded and maintained by undergraduate and graduate students, the mission of the organization is to establish an edible, ecological and attractive garden for student education and enjoyment. In addition, the school club provides a forum for students to advocate for local, sustainable agriculture and the importance of growing native plants and heirloom crops appropriate to the Colorado Plateau.

To help backyard farmers gain the hands-on knowledge and skills to grow food, several organizations and companies have emerged in both states. Through my Tucson-based company, Kitchen Garden Consulting, I provide clients with a series of services that aid in the creation of food-producing gardens tailored to their taste, space and budget. In addition to covering the topics of design, consultation and garden care, my backyard workshops take the complexities out of food growing by providing private mentoring sessions based on client skill level and site conditions.

I also teach several community classes on topics related to edible landscaping including heirloom seeds for the Southwest, seed saving for homegrown vegetables, composting 101 and orchard design. A similar range of workshops are becoming more popular across the Southwest, such as those offered by Albuquerque Backyard Farmers whose courses cover site assessment and backyard farm design, raising urban chickens, principles of beekeeping among other topics. The group has also teamed up with an organization called 2012 Albuquerque Edible Gardens whose goal is to register 2012 food producing landscapes by New Mexico's Centennial in 2012!

In both states, garden centers and nurseries have become integral parts of the backyard farming movement. Not only have these companies increased their product lines but they continue to seek out and propagate heirloom varieties of fruit trees, vegetables and herbs particularly suited to the unique growing conditions of the Southwest. For instance, Tooley's Trees of Truchas, New Mexico, specializes in growing heirloom varieties of apples, apricots, cherries, pears,

plums and other edible trees and shrubs that are drought tolerant and adapted to New Mexican soils. Tooley's Trees are sold at Plants of the Southwest and other nurseries in Santa Fe and Albuquerque that offer native and regionally adapted plant material. In Tucson, Desert Survivors is an innovative non-profit organization that utilizes nursery production as vocational and developmental opportunities for people with disabilities. In 2004, through a partnership with Arizona-Sonora Desert Museum's Kino Heritage Fruit Tree Project, Desert Survivors Nursery began reproducing some of the oldest heirloom fruit trees in southern Arizona and northern Sonora, Mexico. Today, the general public can purchase an assortment of pomegranates, figs, quince, apricots and guavas that were first planted by Father Eusebio Francisco Kino and other early settlers of Arizona.

By increasing their listings of traditional and climate-adapted crops, regional seed companies have greatly contributed to urban food production as well. In particular, Native Seeds/SEARCH, based in Tucson, has effectively worked to get heirloom crops from the American Southwest and northwest Mexico back into their original Native American and Hispanic fields, as well as in urban garden plots in both states. Seeds Trust, located in Cornville, Arizona, targets a different geography; Seed Trust collects worldwide, short season, cold hardy and open pollinated seeds for distribution to gardeners in the high, cold and dry cities throughout the Southwest.

In addition to nursery and seed industry efforts, other commercial and non-profit groups are supporting backyard farming by building water conservation, food processing and gleaning programs. Specifically, the activities of the Watershed Management Group (WMG) are gaining international recognition. This community-based organization in Tucson provides consultation, hands-on training and certificate courses in the design and installation of passive and active water harvesting systems.

Also based in Tucson, Desert Harvesters is striving to promote, celebrate and enhance local food security by encouraging the planting, harvesting and processing of indigenous, food-bearing shade trees. In 2003, Desert Harvesters purchased a hammermill strong enough to grind velvet mesquite pods into flour. Today, volunteers man the mill at several community events in southern Arizona for people who bring bags of pods they gathered from around town.

For people who wish to donate their ripening fruits before they fall from their trees, the Iskash*taa Refugee Harvesting Network has established a dynamic gleaning and social service program. This inter-generational group of refugees from Africa, Asia and the Middle East partner with local volunteers to save approximately 75,000 pounds of fruits and vegetables each year from backyards and local farms. Their harvest—that would otherwise have gone to waste—is then redistributed to refugee families in need.

As other groups and individuals work to preserve farms and ranches on the open spaces that surround the metropolitan areas of New Mexico and Arizona, backyard farmers are doing their part to foster an appreciation for the pursuits and tastes of local foods. Although the expansive fields like those that once lined the Rillito River near my childhood home are largely relics of the past, local food production is breaking new ground in the urban Southwest.

28

four other state- or federally-certified abattoirs that can only handle smaller numbers of cattle, bison, sheep and goats. The widely-heralded Mobile Matanza unit based in Taos County New Mexico still functions below capacity. An innovative stride in Willcox, Arizona to renovate and expand an existing operation has not received sufficient funding to offer new services to livestock producers in New Mexico and Arizona. At the same time, small- and medium-scale poultry production in the Southwest has advanced greatly over the last decade. Pollo Real, in central New Mexico, has now become one of the nation's largest producers of organic, free-range chickens and turkeys, including heritage breeds.

Even the most respected and resilient innovators are suffering hard times. The region's most effective community food kitchen and business incubator, located at the Taos County Economic Development Commission, has recently suffered from funding difficulties and has reduced its services, despite an excellent track record of helping dozens of low income families in the processing, marketing and distribution of their food products. A new community food kitchen will open in 2011 in Tucson's Rio Nuevo project, and others are in the planning stage in several Southwestern communities.

Innovation seldom occurs in a vacuum; it needs a support system of humans with faces, voices and helping hands. Perhaps the greatest innovation achievements in the region's food distribution systems have evolved from the Southwest Direct Marketing Network, which hosts annual conferences that move through a four-state area. This network has given many farmers and ranchers the tools and contacts needed to directly-market their food products through a wide variety of venues (Table 6). Curiously, Arizona appears to be surpassing New Mexico in its level of engagement with direct-marketing strategies. Nevertheless, New Mexico has also experienced significant growth in food distribution alternatives, almost doubling its number of farmers' markets from 34 in 2001 to 62 by the end of 2010.

Growers of good food are not restricted to the rural hinterlands, but are sometimes hidden in the midst of the metropolis. One of the most interesting, recent developments in the Southwest is the emergence of diversified food production within urban and peri-urban landscapes. More than 40 urban farms and homesteads are now direct-marketing



ARIZONA AND NEW MEXICO FARMERS' MARKETS

Why They're Making a Comeback

By Regina Fitzsimmons

I've been astounded by the nationwide resurgence of involvement in small-scale food production, community farmers' markets and other direct marketing venues over the last decade. I recently learned that Arizona currently has 72 operating farmers' markets and New Mexico farmers' markets aren't far behind, with 63 markets up-and-running this year. Our rate of market growth within this region mirrors that of the national boom—showing a 16 percent growth over the last two years.

But the number of markets doesn't tell the entire story. When I contacted Denise Miller, the Executive Director at the New Mexico Farmers' Market Association, I learned that the gross sales in New Mexican markets have increased by over a million dollars since 2001. A conservative estimate is that roughly one in five American farmers are now direct-marketing at least some of their food products through farmers' markets, roadside stands and Community Supported Agriculture (CSAs). What's more, not only are more farmers selling at community markets, but more people are patronizing markets. Miller has observed that over the last decade, the number of customers visiting farmers' markets has already tripled and remains on the rise.

The good news continues: As a result of the niche markets fostered by farmers' markets, I've noticed that more varieties of fruits and vegetables are finding their way back to American tables. And with higher diversity of fruit and vegetable consumption, the higher the probability of improved nutrition. In less than five years, the diversity of crops, livestock and wild foods in Flagstaff doubled, due to the success of the Flagstaff Community Farmers' Market and its spinoffs. For rarities like heirloom apples, research has shown that farmers' markets are perhaps the only outlets that have kept these place-based heritage foods in commerce; without them, I may not have had the chance to sample or begin to understand the terroir (the taste of a place) of old-timey apples.

Terroir is but one of many benefits that farmers' markets bring to Arizona and New Mexico communities that big, box stores and chain groceries simply cannot match. The money spent at a local market stays in community economies, producing multiplier effects. Socially, market vendors, guest chefs and educators from non-profits teach citizens how to enjoy place-based heritage foods. Markets aren't without sensual pleasures, too: Vendor booths are perfumed with lavender sachets, licorice-scented basil and lemony-arugula; every variety of tomato, apple or melon offers a distinctive flavor or fragrance that lingers on our tongue and in our memories.

Nevertheless, I am well aware that farmers' markets are not without their critics. Some argue that items sold at farmers' markets are typically more expensive than commodities purchased at conventional grocery stores, and thus are accessible only to the so-called "elite" (those that can afford higher-priced goods). In response to such critiques, markets in Arizona and New Mexico are striving to change that reality and perception by using federally-funded programs to provide vouchers and food stamps to qualifying individuals



A youth intern at Avalon Organic Gardens, a community supported agriculture project in Tumacacori, Arizona, brings a new harvest of okra from the garden to a roadside stand.

in low-income families that can be used at local farmers' markets. It is through these efforts that markets are striving to become accessible to people in every income bracket.

Take Arizona: Food stamps are provided at 16 of the 72 farmers' markets; in addition, 36 of these markets also accept vouchers from the Arizona Farmers' Market Nutrition Program (AZ FMNP). For the past eight years, there has been a dramatic increase in both the number of markets and the number of their vendors accepting farmers' market vouchers for qualifying, low-income seniors and participants in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC).

Since these federal programs were launched in 2002, vegetable and fruit consumption has increased among low-income women and children frequenting farmers' markets. These successes may be attributed to the fact that the Arizona Farmers' Market Nutrition Program is coordinated through a network of highly-effective organizations: the Association of Arizona Food Banks, Community Food Connections and the Intertribal Council of Arizona, along with the Arizona Department of Health Services and the Office of Nutrition Services.

When I recently visited and bought apples and radishes from the Santa Fe Farmers' Market in New Mexico, I was delighted to hear that New Mexico has also had its share of comparable market successes. The New Mexico Farmers' Market Association has modeled their food access programs after similarly funded federal programs,

like those in Arizona. Out of the 63 farmers' markets in New Mexico, 44 of them—or 70 percent—now accept WIC vouchers. According to the Association, “Last year thousands of WIC participants took advantage of outdoor markets, which featured 800 New Mexico farmers and growers who participated in the program.” In 2007, the New Mexico state government began funding a farmers' market nutrition program directed primarily to low-income seniors as well. According to Miller of the New Mexico Farmers' Market Association, senior sales have increased *six-fold* in the last three years.

Last Thursday I drove to the Santa Cruz Farmers' Market in Tucson, Arizona—a market managed by the Tucson Community Food Bank. The autumn market hours are from 3 to 6pm and it is located straight off the bus line. I found Sara Rickard, the market manager, and when she noticed my surprise over all the hustle and bustle on this particular Thursday afternoon, Sara acknowledged that market popularity is booming. Each season, more people from different walks of life have come to the market.

And the “buzz” doesn't stop with buying fresh, locally-produced foods at markets: Sara has found that regular contact with growers at markets can encourage more Tucsonans to grow their own food, too. Sara explained that the Tucson Community Food Bank offers home gardening programs and workshops about how to raise citrus trees, build chicken tractors, revamp backyards with permaculture designs and manage desert soils for higher nutrient content. Every year, the waiting lists for these classes have grown longer. As a result, more urban gardeners and orchard keepers have joined the Community Food Bank market consignment program to sell back their own extra backyard produce (whether they have a few extra bell peppers or four dozen extra eggs from backyard chickens).

This is affirming news, although Sara didn't hesitate to point out the areas where there remain more obstacles to overcome. She hopes that food voucher redemption rates will grow higher. Sara also wants to see more farmers' markets in Arizona accept food vouchers and food stamps.

Each Thursday I leave my farmers' market with a sense of discovery: I have new foods to try that I can't get at Safeway or Albertson's. I leave feeling connected to a place—to the ground that I've worked with my hands and to a community that I've supported with my wages. And finally, I leave engaged with a group of neighbors that love food, wellness, health and friendship.

It is because of all of these reasons—the gratifying grub, the goods, the economic viability and the gregarious gang—that farmers' markets are making a comeback in many outposts, from mountain towns like Taos and Flagstaff, to desert oases like Las Cruces and Yuma. And we can be proud that among the 6,142 farmers markets in cities and towns thriving across the United States, the Santa Cruz River Farmers' Market in Tucson and the Santa Fe Farmers' Market are ranked among the top 10 in the entire country.



Table 6: Direct Marketing of Foods in the Southwest

	Arizona	New Mexico
Number of producers listed on www.localharvest.org direct-marketing heritage foods	58	35
Number of farmers' markets	72	63
Number of community-supported agriculture projects	29	25
Number of restaurants featuring local foods on their menus	33	43
Number of urban farms and homesteads directly-marketing products	24	15

their fresh foods in metro areas such as Phoenix and Albuquerque, as documented by www.localharvest.org.

YOU CAN'T EAT BAND-AIDS FOR VERY LONG: HUNGER RELIEF IN THE SOUTHWESTERN FOODSHEDS

While lending banks across the country were going belly up the last several years, few of us noticed that food banks were also in dire straits. Since the economic downturn began with the onset of the mortgage scandal, 99 percent of all food banks in the United States have seen a significant surge in demand for their services. All five of the major Southwestern food banks that reported their status to Feeding America, conceded that they have struggled to meet the swelling demand for emergency food distribution. Between January and December 2009, 110 million pounds of food had been distributed statewide by Arizona's food banks. Up 50 percent from the previous year, New Mexico's Roadrunner Food Bank reported that the unprecedented demand was due to the doubled rate of unemployment in its service area. Feeding America stated that 56 percent of the reporting food banks received more requests than ever to meet the needs of children.

You can only slice an onion so thin. At the same time, Southwestern food banks have had diminishing resources with which respond to such demand increases. The Community Food Bank in Tucson reported a 47 percent increase in requests, but only a 44 percent increase in clients they could serve. The Yuma Food Bank experienced a 50 percent increase in requests from May to September 2009, the highest in its 15 year history. In addition to Arizona's four major food banks, there are now some 1,250 other pantries, soup kitchens, homeless shelters and other agencies offering front-line defenses against hunger for children, seniors and families in the state. Overall food distribution through their network climbed 42.2 percent after the 2007 holidays. In 2008—the first year of the economic downturn—this intervention network provided 85.2 million meals to hungry or poverty-stricken Arizonans. There are also 229 food intervention pantries, 45 kitchens and 37 shelter programs providing food assistance to poverty-stricken individuals and families in New Mexico. Well over half of these programs in New Mexico affirm that they offer food assistance and other services to undocumented immigrants. In Arizona, such services for illegal immigrants have recently been politicized to the degree that there are reports of illegal individuals declining to identify themselves at pantries and kitchens, despite their needs.

If you can't get over a hurdle, go around it. While most food banks are confronting barriers to adequately meet emergency food relief needs of the region's hungry, a few food banks are trying other means to help the poor become more food secure. The Community Food Bank of Tucson appears to be one of the national leaders in a diversified approach to food insecurity. The bank and its staff have garnered awards and honors for many successes: managing farmers' markets where over 50 percent of all customers are low-income residents; running its own farm and gleaning program to supply fresh fruits and vegetables to its clientele; spearheading a region-wide initiative, *Somos La Semilla*, to increase food producing capacity and access for both urban and rural communities in southern Arizona.

Hunger does not go away after one meal. In Arizona an average of 544,688 people participated in the Supplemental Nutrition Assistance Program (SNAP) in 2007 and that number grew to 813,987 in 2009. More recent D.E.S. information reports that in August of 2010 over 1,052,020 Arizonans participated in the SNAP program. Since January 2009, there has been a 24 percent increase in food stamp requests from New Mexico through SNAP, which is now the federal government's major intervention initiative for mitigating food insecurity. Fortunately, SNAP recipients can now obtain fresh fruits and vegetables from a growing number of farmers' markets in Arizona and New Mexico that employ managers who have received training to facilitate SNAP transactions. In New Mexico, farmers' market sales of fresh produce to low-income recipients of the WIC sub-program of SNAP have increased from \$250,000 in 2001 to \$274,436 in 2007. In addition, healthy school lunch and snack programs subsidized by the USDA have been piloted in Southwestern schools on the Zuni Indian Reservation and in southeastern Arizona.

The Southwest's food systems need more than Band-Aid solutions—we need something prescriptive and preventative. Both of the states at the heart of the Southwestern region have been slow to design a more sustainable future for food production and distribution, and chronically respond to major challenges after the fact, rather than proactively. Recently, however, this behavior has been changing for the better. There are now numerous groups intentionally redesigning local and regional food systems in the Southwest, including the Southwest Marketing Network, Farm to Table, Community Food Connections, Flagstaff Foodlink, Baja Arizona Sustainable Agriculture, *Somos La Semilla*, Flavors Without Borders Foodways Alliance and the Dreaming New Mexico Project of the Collective Heritage Network. Perhaps the most significant advances in dealing with food insecurity in the Southwest over last decade have been the establishment of the New Mexico Food Policy Council and the New Mexico Food Gap Task Force, both of which were enthusiastically supported by Governor Richardson. Despite similar attempts to obtain sponsorship by the state government of a Food Policy Council for Arizona, buy-in has not been forthcoming from either the governor or the state legislature. It is our hope that Arizona's and New Mexico's positions near the lowest rungs of America's poverty and food insecurity ladder will trigger more attention from policy-makers regarding these issues.

RECOMMENDATIONS

The following recommendations have emerged from workshops, retreats and one-on-one conversations with participants in this Southwestern foodshed assessment. While not all of them are formally endorsed by every participant and his or her organization, they provide a point of departure for advancing future innovations in the region's food systems. We encourage agricultural, environmental and consumer groups to use these recommendations as discussion pieces in their communities, and to contact policymakers and community leaders to advance those that they deem to be of benefit to their residents' health and economic well-being.

SUPPORTING THE PRODUCERS OF LOCAL FOOD AND FIBER

The Southwest Marketing Network's Decade of Impact in the Region

By Jim Dyer

Standing with our sheep, seven miles north of New Mexico and 50 miles from the Four Corners of the Southwest, I sometimes marvel at the view of the world we are blessed with from our home. A couple arcs of the cartographer's compass pinpoint this place as Marvel, Colorado. Hesperus Peak is to the north, Durango and the snowy San Juans are to the northeast, the slopes of Mesa Verde's ancient farmlands are to the northwest and the warm horizons of Arizona and New Mexico lie to the south. And yet, these landmarks only hint at the diversity embedded in the Southwest Marketing Network's vast and varied landscape.

The Network formed nearly 10 years ago to address the "distance to market" problem in the Four Corner states by working with farmers and ranchers to develop alternative outlets for their products, such as farmers' markets, CSAs, farmer co-ops, and the like. The hypothesis was and remains simple:

Our producers already have the skills, ingenuity and determination to make impressive improvements in their operations, but they will gain momentum if given inspiring examples of innovative approaches, coupled with modest resources and training. Our job was simply to guide diverse people together, put on workshops and bring the best informational resources to the table.

One of our Steering Committee members, Clayton Brascoupe of the Traditional Native American Farmers Association, said it well early on: "We won't likely be driving trucks of produce, but rather guiding trucks full of information across the region."

And that we did. The Network's annual conferences began in Durango, but moved to Flagstaff, Albuquerque, Grand Junction, back to Flagstaff, then on to Santa Fe, back to Durango and over to Salt Lake. (Window Rock on the Navajo Nation will host us next.) Farmers, ranchers, agents and marketers were eager to share and learn, and Native American participation has impressively grown over the years. At each conference, our discussions seem refreshingly new, for we focus on promising opportunities in agriculture rather than rehashing the same old problems. Maybe our future never really was in those distant markets, but always a bit closer to home.



Of course, as the Network has grown and matured, we have needed to embrace new issues and adapt to opportunities. We found that many of us, especially those of us from rural areas, were not only distant from markets, but distant from the seats of economic and political power. Opportunities arose for us to support the development of food policy councils across the Southwest to help give a voice to all in the region in shaping the policies—local, state, tribal and federal—that can make or break a local food economy. New Mexico led the way in state level policy development and remains an inspiration to the rest of the region as policy working groups continue to develop. Arizona has offered a variety of market-driven innovations. But most importantly, the Southwest is increasingly heard, rather than herded in discussions of policies and practices that may benefit our populace.

At the same time, the landscape of the Southwest has been changing. The region-wide drought gained strength just as our Network was forming, presumably through no fault of our own. Over the last decade, I've personally witnessed pinyon pines die in large swaths. I began hauling water, cutting dead pinyons, protecting junipers, planting fast-growing (though weedy) elms and wondering why magpies and morning doves were replacing our pinyon jays. I witnessed a pall of uncertainty and uneasiness settle over Southwest growers. We

had dealt with short-term drought and climatic extremes before, but the depth of this drought—along with the realization that it could be a precursor of what was to be a new and even harsher climate—tested the resolve of my neighboring growers, and my own as well. How could I ask growers to try new, inherently risky enterprises, even if our ultimate hope was to reduce their risk in the long run.

Fortuitously, we found that the marketing landscape in the Southwest was changing as well, and in most cases, for the better. Rather than focus solely on helping farmers and ranchers make their new markets work better, just as times were getting tougher, we realized that we needed to connect these producers with allies in their communities—those working on childhood nutrition, local economic development, environmental stewardship and social justice. At our conferences, producers became outnumbered by their community neighbors who were committed to help their producers market their goods locally.

The local food movement has matured into a sophisticated dialogue between producers and buyers—and thus, communications have opened relaying the many reasons to advocate for selling and consuming fresh food from nearby farms within our local economies. What's more, a dialog has opened illuminating the sustainability values that people want to see embedded in their food system.

Local food system development is now increasingly seen as a tool to help reduce obesity and health care costs, boost local businesses and combat climate change and other environmental problems. Farm to School programs have captured the imagination and energy of countless neighborhoods across the nation. In tribal communities, there is renewed hope and interest in traditional foods, nutrition and culturally-adapted production practices. People are celebrating their place-based foods—their seasons, unique tastes, histories and those who grow them.

As we look ahead, the challenges are sobering, but our tools are impressive. If we forget our allies, we can become paralyzed by the uncertainty of our changing climate, our struggling economy, our children's vulnerability to obesity and the sluggish response and actions of our government. And yet, the determination, resolve and optimism that I have seen among our many partners, conference participants and funders of the Southwest Marketing Network gives me great confidence that we can come away with strong food systems, better than most of us have ever had.

Undoubtedly our lifestyles must change in many ways to cope with the challenges ahead—technology cannot and should not do it all. Improving the way we grow, move, eat and think about our food can be a crucial part of that needed change. And so, it has been an honor for the Network to have contributed to the community food movement in the Southwest. It is clear that we must do a better job to connect those working so hard to improve our food systems in this region, make available the best resources to get the job done and highlight all the inspiring projects going on across the Southwest. That is clearly our task as we enter our second decade.

To find out more about the Network and its many innovative partners, funders, projects, resources, events and our upcoming conferences, look us up on www.swmarketingnetwork.org. 🌱

COMMUNITY VISIONING PROJECT

An innovative, comprehensive approach to health and well-being for Native American communities in Arizona and New Mexico

By Kristen Speakman and Allison Barlow

There are many new initiatives in Indian Country regarding food security and food sovereignty. In this region, tribal leaders and educators have jump-started at least a dozen projects involving community farms and gardens and as well as community health and food education efforts. We would like to share news from the field from the Kewa Pueblo in New Mexico and communities from Tuba City located on the Navajo Nation and White Mountain Apache Reservation in Arizona.

Americans face a crisis in food-related disease and disharmony. One of the country's most affected regions is the arid Southwest. Arizona and New Mexico rank among the lowest states in the country for food insecurity and sub-standard family income; these twin problems are affecting a health crisis manifested in childhood obesity, diabetes and chronic health risks. Native Americans living on rural, reservation lands are the most affected populations within Arizona and New Mexico. These same people came from a heritage that supported sophisticated agricultural and food gathering practices, reinforced through traditions and lifestyles that promoted health and harmony among humans, Mother Earth and the foods she bore.

To address the complex social, economic and acculturation issues that undergird pressing problems today, Johns Hopkins Center for American Indian Health has embarked on a *Feast for the Future* initiative with Native American partner communities in New Mexico and Arizona. The goals are to: 1) ensure that Native children begin their lives with the healthiest possible nutrition and develop positive trajectories for nutrition and fitness through their formative school years; 2) promote community capacity to reintroduce healthy, indigenous foods, diets, agriculture and meal preparation into the daily lifestyle; and 3) develop self-sustaining activities so that the resulting impacts can endure for generations to come.

Current communities participating in our *Feast for the Future* initiative include the Kewa Pueblo (formerly known as Santo Domingo) in New Mexico, the Tuba City community on the Navajo reservation and the White Mountain Apache Reservation, both in Arizona.

To launch this initiative, we began a "Community Visioning" process with community stakeholders in each pilot site in September 2009. Our goal was to create a community-driven plan for promoting children and family nutrition and access to healthy foods. National consultants in the areas of pediatrics, nutrition, food distribution, agricultural restoration and community and school gardening were recruited to share their expertise. Our final meeting was in March 2010 in Santa Fe, New Mexico, and at the end, a detailed three-year community plan for each of the pilot sites had been created.

Each community is in the process of implementing their community plans, all of which include farmer-elder-youth experiential training programs, development of indoor and outdoor educational centers, engagement of local schools in edible school garden programs that utilize a rigorous evidence-based curriculum, planting



community gardens for training and sharing and revitalizing traditions and sacred sites that are vital to renewing traditional food systems. Each community has appointed a Native advisory board comprised of elders, farmers and health leaders, who are guiding local priorities and processes.

All three participating tribes are struggling to maintain language and cultural fluency among elders, while middle-aged tribal members are rapidly losing their indigenous languages and cultural practices, and their children, even more so. Paralleling the loss of language and cultural knowledge is the unraveling of ecological knowledge and wisdom that lives within the language and cultural practices. While tribal projects are individualized and share important differences and similarities in varying geographies, cultures and histories, the Johns Hopkins Center supports and documents the processes communities use to revitalize culture and language connected to farming and land-use, healthy food access and distribution, cultivation of bio and cultural diversity and related pathways to community health and healing. This documentation will serve as an important resource for other communities interested in replicating this type of program.

Perhaps the most innovative component of the initiative is a unique, private-public partnership that aims to eliminate local food deserts by creating a viable "Mobile Grocery" enterprise. This proj-

ect, called MoGro LLC, was conceptualized by Rick and Beth Schnieders as a strategy to overcome access barriers to affordable, healthy foods in economically distressed communities. With support from tribal leaders, the Kewa Pueblo will be the first to pilot the mobile grocery. To prepare for this work, we completed a thorough market survey with the Kewa Pueblo in Spring and Summer 2010, where we determined significant community enthusiasm, interest and need for the Mobile Grocery. The Schnieders then identified a professional distributor, La Montanita, to operate the MoGro truck and fulfill the inventory and delivery responsibilities of this project. In aiming to solve food access issues, this strategy has been designed so that ultimately:

Indigenously grown produce, organically raised meats or hunted game and locally prepared foods using traditional ingredients will become part of the foods sold from the truck, thus improving the local economy and access to healthy, locally cultivated foods.

The participating indigenous communities will have opportunity to take over the operation, management and potential profits from the mobile grocery, with the hope that profits will be used to sustain future nutrition promotion work.

In the meantime, there are other successes: In each of the three communities, edible school gardens are fully operational and are being institutionalized into participating schools. Local elders and farmers are helping to teach curricula to ensure the transmittance of appropriate traditional knowledge, language and culture to youth. The edible school garden program is undergoing rigorous evaluation so the curricular model may be shared with other interested communities. Positive impacts have also been observed, including increased hopefulness and self-esteem among participant farmers and quickly emerging economic opportunities, such as: the selling of steamed corn at open air markets, the development of farmers' markets in two of the three communities and implementation of a technical farming workshop series at each site, with plans for expansion in coming years. The projects are also fortified by a high level of community support for the projects, evidenced by large numbers of volunteers, in-kind product donations and enthusiastic endorsements from the tribal governments.

The current challenges faced by Native Americans are sentinel for all Americans, as well as indigenous and non-indigenous peoples worldwide. Native American communities have both tremendous challenges and a rich heritage for renewing healthy, affordable food pathways. If successful, the First Americans could lead a powerful movement to foster and reclaim traditional land use and food system practices among all Americans. The tribal communities that have chosen to be partners in Feast for a Future may now have the opportunity to translate their lessons learned to help other communities across many languages and nations around the world. 🌱

Policies for Whole Food Systems Design

- Our communities, states and nation must immediately and effectively address the dismal levels of poverty, food insecurity and nutrition-related diseases among our multi-ethnic populations, which will likely worsen with advancing climate change unless unprecedented measures are taken. A portion of Arizona and New Mexico's vast agricultural resources must be better targeted to feed the hungriest of the region's residents. County- and city-owned farm and ranchlands should be leased to growers with the express purpose of putting healthy foods and jobs back into our local economies.
- The New Mexico Department of Agriculture and Arizona Commission of Agriculture and Horticulture should consider re-defining their goals to assure food security, safety and sustainability from farm to table for their state residents, and broaden their advisors to include a wider range of stakeholders across the entire value chain in their food systems.
- The Deans of Agriculture at the University of Arizona and New Mexico State University need to de-silo their faculty and extension personnel to more broadly address impending challenges such as climate change, drought, water scarcity, rising fossil fuel costs, farm labor shortages, farmland loss, food insecurity, obesity and diabetes if our region is to feed its most vulnerable populations, sustain food production and maintain or restore environmental quality to our lands and waters.
- Each state needs to do an assessment of the past and impending losses of prime farm and ranchlands by eco-region and/or production type within each foodshed, and work with land trusts and county zoning officials to assure that our food and water security are not compromised by further losses.



THE NEW CLASSROOM

Reshaping University Dining Halls with Local Foods

By DeJa Walker

Your earliest memories of cafeteria food may be a lot like mine: Mounds of perfectly-shaped mush. For industrial-strength rice, a standard scoop did the trick—the dome-like mass would hold up through the jostle of the cafeteria lines. I remember the hollow clank of my fork hitting the plastic tray as I picked apart the glob of... what? The reddish-pink goulash with a ketchuppy-zing—“Spanish rice,” they called it—was chewed each day, with agony. After we ate, we were released to recess where the starches and sugars burnt off in a matter of minutes.

Fortunately for us, cafeteria foods are a-changin’. I know this to be true because I recently worked in university food service. Many years after my first bite of mush (rice in disguise), cafeteria food has re-entered my palate.

It is my firm belief that regardless of the number of diplomas awarded by an institution, each college and university has an obligation to keep its students and staff healthy. Because half of all American adults eat at institutional food services each day, what they are served matters. The values of human health and environmental health are reshaping what we choose to eat.

Today, the term “local food” is on the tip of my tongue. Thinking “locally” has challenged me to look at the importance of our institutional food service providers within the academic arena of colleges and universities. When we choose to look at food and shape our eating habits in this way—eating foods seeded and harvested close to home—we aid change in our food system, working toward lowering our carbon footprint and eating more equitably, in a way that is both clean and fair.

Such visions have already generated a surge of interest in integrating locally- and sustainably-grown foods into the many universities and colleges found across New Mexico and Arizona.

Having spent a considerable amount of time entrenched in a student-led food movement at Northern Arizona University (NAU), let me speak to that situation first:

In 2009, NAU students wanted to explore opportunities for sourcing foods from nearby farms and ranches and additionally, students wanted to educate their peers about the economic and ethical importance of locally-sourced foods at the same time. Discussions, both within a Slow Food On Campus chapter and in a curriculum-based focus group, helped catalyze the creation of a sustainable café on campus (still a work in progress). We organized meetings directly with the food service provider, Sodexo. Administrators began to take notice of the coalescence of student activism around food issues. Casey Fisher, the NAU Marketing Director for Sodexo, noted that these discussions “heightened the demand for more local foods,” and that these conversations were also linked to a “larger concern for the well-being of our environment as well as personal health.”

In response to such interest, in 2007, NAU became one of the first three colleges in the United States to sign onto the International Slow Food Association agreement “to join a worldwide network of universities and research institutes to pursue efforts to protect the environment, agricultural biodiversity and cultures...” This agreement



is embedded with sustainability and ethics protocols and it encourages Sodexo to look beyond today—something Sodexo now does through its Better Tomorrow Plan. This plan is embodied in their 14 commitments for a sustainable and a just purchasing ethic.

NAU students are not the only ones stimulating change in campus food systems. Chartwells, at the University of New Mexico in Albuquerque, has now devoted a full division of its staff to advancing sustainability and sourcing local foods within their guiding company principles. Dave Aylmer, Senior Director of Dining Services and the Southwest Region Executive Chef, says “This sustainable food initiative is company-wide. Although it is driven on a corporate level, it is also due in part because the clients want it.” Students, being his clients, “are driving this local effort.”

At Prescott College, student interest in healthy and sustainably-produced food led to an abrupt departure from its 30-year-old food service model. Today, the college’s environmentally-conscious Crossroads Café uses a variety of local resources for its green building and its menu. The Food Services Director at Prescott College, Chef Molly Beverly, knows that she and her staff cater to students who are “predisposed to good food—local, clean, fair, nutritious.” Beverly sources ingredients from many local farmers; what’s more, she and her husband have been garlic and corn farmers, so they fully know the challenges. Because Beverly works on a small, private college campus that lends itself to more person-to-person interactions, the Crossroads Café is strongly linked to the surrounding community. The demand for local food has been budding and seeding. Now, Molly Beverly has inspired other college chefs hoping to help “grow local farms” through their purchasing power, sheer persistence and reprioritization of funds to

support contracts with small farmers. Beverly's efforts yield many rewards, both immediately tangible and promising for the future: She is able to offer burritos made with local eggs every day and at the same time, she's forged stronger, lasting relations with farmers in her community.

However, even at innovative liberal arts colleges, chefs face many of the same challenges found at larger universities. Beverly feels that chefs everywhere must struggle to figure out how to efficiently reach the available supply of fresh and local foods. She concedes that "small farms just don't grow enough to supply what most colleges and universities require."

Nevertheless, purveyors are working on solutions. To meet FDA standards surrounding food safety, all farmers, ranchers and food processing plants must meet certain legal qualifications and liability bonding levels in order to sell food to a public institution. In New Mexico, Dave Aylmer has observed that many small farmers "still don't have the means to get bonded, and so it is important for them to go through a co-op. [...] Universities need a smooth avenue in order to purchase." Such co-ops, Casey Fisher suggests, are an ideal way to "assure quality, food safety standards, liability insurance and distribution."

In 2009, Arizona State University opened a new food hotspot on its Tempe campus called Engrained Café. Operated by Aramark, one of the country's largest institutional food services, this café is "committed to locally grown food and environmentally friendly practices"—a terrific model that ideally will soon be used by many other universities.

In 2010, the University of Arizona not only started growing herbs on the roof of its student union, but the U of A Dining Services made additional menu changes in an effort to source more of their food from organic and local markets. "It's important," says Victoria Christie, assistant director of dining services for Arizona Student Unions, "because students wanted it. The awareness is huge. It's so different than even five years ago. And we have to stay on top."

These creative and evolving solutions prompt a search for innovative business models—not simply a search for fresh ingredients. Arizona and New Mexico universities and colleges have a chance to lead each student through the dining halls, tray by tray, so that every eater may learn about how his or her food choices affect their social and ecological community. It is in this way that students can learn what each dollar and bite is supporting or degrading.

To further advance food sustainability on campus, we will need even more teamwork—researchers must connect with food service employees and they, in turn, must get to know their community members who are food producers and processors.

College dining halls should be treated as classrooms—as places that give students active roles in connecting their food choices to the health of the larger world around them. We must nurture the next generation of food activists with new ideas as well as foods. It is a movement that, I hope, will become the norm. ❧

- Water partitioning between urban and rural sectors needs to be conjoined with the foodshed concept, so that future allocations do not impair our states' capacity to feed our citizenry.
- While New Mexico's private and family foundations have generously invested in advancing innovations in its state food systems, Arizona foundations have lagged far behind. The New Mexico Community Foundation should invite Arizona foundations to one of its meetings to promote co-investment in food system innovation across state boundaries.
- While Arizona has advanced many market-driven innovations to diversify and enrich its food systems, New Mexico has lagged somewhat behind on several fronts, for instance, the promotion of market niches for place-based heritage crops and livestock breeds. Through the Southwest Marketing Network, producers need to compare what strategies they have found effective for advancing market-driven solutions.
- Both states need to invest in a greater variety of means for rebuilding food production and distribution infrastructure across the rural-urban continuum that have proven effective elsewhere through Rural Planning Districts, Development Zones, National Heritage Areas and Collectives.
- We need to undo certain cultural biases so that we no longer discourage the best and brightest of our youth from careers in working the land and working with food. We need our educational institutions to return to the Jeffersonian ideals of advancing farmer-scholars and a culture of eating well.

Best Practices and Policies for Sustainable Food Production

- Both states should attempt to reduce the overproduction of certain commodity crops for export (like Arizona's overproduction of melons and lettuce and New Mexico's overproduction of chiles) and provide incentives for farmers to grow a broader diversity of crops for local consumption.
- Both states need to assess whether any current federal or state subsidies (for example, for ethanol) are unintentionally damaging their productive capacity to provide food (in the form of corn or other staples) to meet the nutritional needs of their poor.
- Each foodshed should discuss what it deems the optimal ratio of food-to-forage production to ensure that scarce water is directed to the crops most needed to maintain the region's economic well-being and community health.
- Both states need to increase private and public funding to recruit future farmers and ranchers and help them gain access to land and water. We need young farmer incubator programs like the one facilitated by Farm to Table, but we also need mentors who will guide rather than disparage newcomers, or else our farmer and cattleman's associations will soon be exclusively populated by septuagenarians.
- We need to promote urban and peri-urban food production through involving the horticulture industry and garden industry in the local food movement.
- Within cities and counties, we need to change zoning ordinances to optimize access to arable land, and to use fallowed, publically-owned lands for local food production once more. We need to keep such places as truly functional working landscapes rather than as quaint but obsolete museum-like pieces of bygone agrarian history.

NUTRITIONALLY ENHANCING SCHOOL MEALS AND SNACKS

What We Feed Our Youth Shapes their Health and Strengthens Rural Economies

By Kelly Watters

"When are you going to bring more Caesar salad?"

—student of Patagonia School

Over the last decade I have helped develop education programs for families of limited incomes, a selling cooperative for surplus produce and markets that offer fair economic exchange between small farmers and people with low-to-middle incomes. Through this work, perhaps I have become somewhat adept (and exhausted) at making small toe holds in balancing the inequities of the food system in favor of community health. I have had to ask myself where we can get our biggest bang for our buck: Where does the greatest leverage point lie and what good, green and fair foods can we get to the most food insecure areas?

I believe most public schools would unarguably welcome any improvement to the quality and nutritional value of food currently served to students, especially if better foods could reach the most food insecure. This development would not only improve the health of children and their performance in school, but it would also offer fiscal support to local, rural economies.

Whenever state childhood obesity statistics come out, many educators in Arizona and New Mexico brace themselves for more bad news. In 2007, childhood obesity affected 30.6 percent of all school children in Arizona and 32.7 percent in New Mexico. Both Arizona and New Mexico rank in the top half of states with the highest number of obese and overweight children, and their rates have increased since 2003.

However, at the same time, there are dynamic, new programs emerging to deal with this rising tide of fat in our schools. While working in rural, Southern Arizona trying to improve access to good food, I learned about a program that gets at the crux of this issue and has expanded community health.

One effort, called the *Fruit and Vegetable Pilot Program*, provides fresh and dried fruit and vegetable snacks, free to students. It was first piloted in 2002 and reached 107 elementary and secondary schools across the country, including seven schools associated with the Zuni Indian Tribal Organization (ZITO) on the New Mexico-Arizona border. This program distributed healthy foods either through classroom service, central kiosks or vending machines. Since then, the program has expanded to include a few select Arizona schools as well.

To qualify for the program, elementary schools must meet a prerequisite: at least 50 percent or more of the students must be eligible for the free or reduced-rate National School Lunch Program. Patagonia School, in southern Arizona, was selected for participation during the 2009-2010 school year. Children enrolled in Kindergarten through Eighth Grade received an organic fruit or vegetable snack, once a week, at picnic tables on the school grounds. These fresh, organically-grown snacks were provided by Red Mountain Foods, a locally-owned natural foods market that has served the Patagonia community since 1981.



When the USDA's Economic Research Service (ERS) evaluated the success of those programs first selected for the pilot program in 2002, it reported that 80 percent of the students had become very interested in the snacks, and that student interest in these foods increased over time. Patagonia's school superintendent reported such successes. Many students were exposed to fruits and vegetables they had never tried before. A few Patagonia children ate figs for the very first time, even though fig trees adorn many yards in their town! The program coordinator planned the snack days to coincide with each week's athletic events; community members believe that these nutritious foods gave their children the extra spark needed to win two sports championships!

The funding for the *Fruit and Vegetable Pilot Program* varies year to year due to USDA allocations to Arizona that require schools to reapply on yearly basis. In the case of Patagonia School, it lacked the qualifying number of students from low-income families to reapply for healthy snack support in the 2010-2011 school year. Patagonia may face stiffer competition for this support in the future given that more schools are intent on participating; for example, 75 elementary schools applied this year compared to 40 the prior year. Nevertheless, during its year of participation, most of the students at Patagonia School benefited from improved nutrition for only a \$6,000 investment.

The *Fruit and Vegetable Pilot Program* also positively affects local economies. Red Mountain Foods, a business in Patagonia for the last 29 years, gained \$3,000 in business directly from Patagonia School. Parents, formerly unfamiliar with the local market, learned of it through their children's enthusiasm for fresh, organic foods. The Food Stamps, or SNAP program, also benefits Red Mountain as well as residents' access to healthy food choices in Patagonia. SNAP purchases represent five percent of Red Mountain Foods \$300,000 annual sales—an amount that has doubled over last two years. Red Mountain Foods will be expanding this year from its 900 square feet original site to a new store of 1,500 square feet.

Based on the ERS evaluation of the *Fruit & Vegetable Pilot Program* in 2002 and anecdotal information from students and teachers of Patagonia School, there is clear, increased interest in, and enthusiasm for, fresh food on campus. Children's interest in new foods (like Pink Lady apples and figs) brought parents to the local market, and both Red Mountain and the Produce Wagon benefited from the additional business. Improved community health and economic growth are building the resiliency in these communities and shifting the notion of what the future of food in their community should be. 🌱

- When large commercial farms are foreclosed upon, we need to see if there are ways to lease or purchase parcels to grow less water intensive, culturally appropriate crops for local markets.
- We need to increase producers' awareness of the expanding niche markets for place-based heritage foods, not only for sales to tourists but for their nutritional and cultural values to nutritionally-vulnerable populations.
- Because we have lost much of the "agriculture of the middle"—farms and ranches between 15 and 1,500 acres—we need to re-diversify the size and structure of food production operations in our states.
- We need state task forces to deal with the current problem of farm labor scarcity, exploring options like community farms with a shared labor force.
- We need to take advantage of interest in promoting green jobs through economic stimulus packages by arguing that we need more of the work force dedicated to the long term sustainability of our water and soil's productive capacity.
- We need to engage with other regions in fair trade exchanges of foods that cannot be grown here, but are still appreciated by our consumers.
- We need to train both our youth and the currently-unemployed in the management of small, food-related businesses. Currently, only large-scale business models are taught in business management programs.
- We need to use stimulus money to foster micro-enterprises that innovatively acquire, package, market and distribute regional food through means that produce fewer greenhouse gas emissions than conventional operations.
- Restaurant owners and managers need to establish solid relationships with growers to source desired local foods using methods that are both fiscally smart and reliable.
- When foods are delivered by trucks to loading docks at schools, universities and hospitals, they should be encouraged to be re-loaded with compostable food refuse that can be returned to food-producing sites for integration into the soil.
- We should develop a digital system of Southwest (bi-state) labeling and tracking (using bar codes on packages and iPhone applications) so that merchandisers and consumers can see the miles a food has traveled and judge whether or not it is "locally appropriate."
- Farms and ranches maintaining "open spaces" on lands leased to them by a city, county or state government in our region should be required to enhance "the public good" by putting a sizeable portion of their harvests back into local food economies, and by providing neighboring school children with educational opportunities to learn about food systems. Cities and counties should foster agro-industrial developments nearby with low-interest loans to develop co-located processing hubs for meat, blood meal, hide, wool and other by-products.

Food Distribution, Marketing, Delivery and Waste Reduction

- We should recognize that our food systems are both local and global and define target amounts of foods and beverages that we aspire to equitably acquire from each end of the spectrum.
- The greatest efficiencies in food distribution strategies may be at *both* the largest and smallest scales. We need distribution brokers who are willing to work with producers of all sizes to get their foods into our local economies.
- Arizona and New Mexico should collaborate and develop an online "food odometer" database that provides users with the farm-gate addresses and travel distances to food services to help buyers have a more direct access to crops and meats produced in closest proximity to them.



FROM PRAISING BORDER CUISINES TO GRAPPLING WITH BORDER HUNGER

By Maribel Alvarez and Gary Paul Nabhan

It is ironic that for many decades, Americans flocked to the border towns of Arizona, California, New Mexico and Texas to get a taste of the sumptuous “border cuisines” that are now celebrated worldwide. Recent inquiries have documented that many of the families living near the border on both sides of the line—especially migrant and seasonal farm workers—suffer from some of the highest rates of hunger, food insecurity and nutrition-related diseases out of any group of people living in North America. While Tex-Mex, Sonoran-style, Baja and new California cuisines may be all the rage in middle America, the children and elders living on the margins may be wondering where their next meal will come from.

In one recent survey of migrant farm workers who dwelled in border towns and harvested food crops in both the United States and Mexico, 82 percent of their households suffered from food insecurity and 49 percent of them dealt with outright hunger. It was not uncommon for at least one family member in these food insecure households to have suffered from gastrointestinal infections, depression, anxiety and wildly-fluctuating blood sugar levels triggered by poor nutrition. Recent surges in violence along the border and subsequent crackdowns are also taking a toll through what a recent USDA report called “disruptive eating patterns.” These patterns echo the heightened levels of stress suffered by border residents. While for generations, families living along the border created networks of support that centered around the cultural sharing of a meal—affirming time-tried folk knowledge that guided their choices of foods and preparation—today many find themselves cut off from these sources of nutrition and psychological comfort.

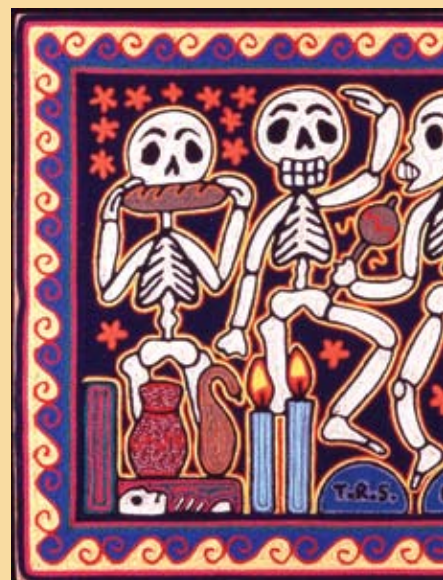
In another survey of over 1,700 school children living in a Mexican border town, the prevalence of true hunger was low, but 44 percent of the students lived with the risk of hunger. This fact influenced the overconsumption of cheap foods packed with “empty calories,” so much so that 38 percent of the children were overweight or obese. This level of overweight but undernourished children in border towns roughly mirrors the reality of Hispanic and Native American children throughout the Southwest.

Yet, not all news from the borderlands food system is disparaging. While negative trends reflect deplorable levels of nutritional vulnerability that are irrefutable, many efforts to reverse food insecurity are underway. In the most promising cases, change is coming as a result of the resolve and creativity of poor, working families themselves. In El Paso, Texas, for example, migrant, blue-collar women laborers have come together under the auspices of the organization, La Mujer Obrera, to operate their own restaurant and marketplace (Mercado Mayapan) so as to have better access to fresh, healthy ingredients. This effort not only creates jobs for women displaced by El Paso’s now defunct garment industry, but also offers an alternative for healthy eating by barrio residents. The strength of La Mujer Obrera’s entrepreneurial approach to food security lies in the understanding of both cultural and aesthetic practices that underscore food choices. Workers at their impressive Mercado Mayapan spend part of their work time researching and learning how to prepare foods from the various

regions of Mexico, identifying novel ingredients and the best ways to use their flavors—an effort as much about pride, heritage and self-empowerment as it is about overcoming limited resources and improving food intake. Despite the significance of this work, funding shortages threaten La Mujer Obrera’s Mercado Mayapan and its other programs, which have generated further anxiety and stress among those most committed to leveraging changes in their community.

Fortunately, major funding initiatives from national philanthropic and research entities have recently come into place and may ultimately reduce food insecurity in border communities. The Robert Wood Johnson Foundation has selected a number of towns in the border states for its Healthy Kids, Healthy Communities Initiatives, including rural communities surrounding Silver City, New Mexico; Metro Phoenix, Arizona; Rancho Cucamonga, California; and San Antonio, Houston and El Paso, Texas. In El Paso, the Chamizal Neighborhood Initiative is focused on after school and weekend activities for youth that give them access to and incentives for participating in healthy eating and physical fitness opportunities. The community also hopes to invest in healthy public policies that take into account the long-term consequences of childhood obesity. In the Silver City, New Mexico area, the Gila Regional Medical Center Foundation works with low income populations that have been disproportionately affected by food insecurity. Its Food Policy Council initiative is hoping to develop a more responsive local food system and jumpstart sustainable agriculture projects that help nourish community members in the future.

Nevertheless, some of these public programs are struggling to simply keep track of some of the most food insecure people in their communities—the majority of whom are migrant farm workers who have sought work in the United States without fulfilling all the legal paper work. While there were over 1.7 million illegal immigrants living in the four U.S. border states just a few years ago, these numbers have recently declined due to the loss of jobs resulting from the economic downturn and stiffer immigration policies. In Arizona, the number of illegal residents peaked at 560,000 in the early months of 2008, and dropped by perhaps as much as 18 percent in the following year, with as few as 309,000 to 283,000 undocumented individuals remaining in the state by the end of 2010. Migrant workers of Mexican descent have left Arizona in droves after the spring 2010 passage of Proposition 1070, taking refuge in New Mexico or California where it is perceived that there are fewer risks of racial profiling during immigration enforcement. And yet, their loss of homes and jobs may have put their children at even further risk. Our hopes and prayers are for a world where no child is left hungry, regardless of the legal status of his or her family members. But there remains much to do to achieve such a vision of food justice on both sides of the border. ❧





Food Crisis Intervention

- Because the staff at our food crisis intervention centers (ie. food banks) has been working at or beyond capacity for several years, we must find ways to add to their workforces through government programs like AmeriCorps, in-service learning programs at colleges and universities, and try to foster stronger financial and volunteer commitments from faith-based communities.
- Our schools, hospitals and nursing homes can prevent tens of millions of dollars of medical interventions simply by providing foods of high nutritional value to our youth and elders.
- We must lower the hurdles to help food-insecure families apply for and receive food stamps (that can be used at farmers' markets), because it is currently easier for them to get canned commodities than fresh foods.
- Universities, colleges and schools can be further sanctioned and encouraged to deliver their "expired," but still safe-to-eat, vegetables and fruits to food banks and soup kitchens.
- All food banks, homeless shelters and soup kitchens should be encouraged to diversify their food crisis intervention programs to include participatory food preparation, gleaning and gardening; this will require that both private philanthropists and government agencies invest more in these intervention strategies.
- Newly-constructed low-income housing developments subsidized by the government should be mandated to include land for fruit trees and garden plots to empower families to participate in "grow-your-own" programs.
- Once immediate crises for food-insecure families have passed, they should be made eligible for and assisted with microloans to help with food supply and delivery in their neighborhoods.
- Because many of the hungry and food-insecure families in our states may shelter relatives who are illegal immigrants, non-profit crisis intervention centers need to be philanthropically supported by churches, foundations and human rights groups to reach these people with food and medicine before their health is further compromised.
- Maps of publically-accessible and gleanable fruits in parks and school yards need to be widely-distributed. Irrigated garden plots should be made available in more public spaces for minimum charges to users.
- An Inter-Faith conference on Food Insecurity and Hunger in the Southwest should be planned and promoted in order to ramp up community awareness of tangible actions that can be taken to deal with the horrific hunger crisis that has been mounting in our states since the beginning of the economic downturn. ✂





LET US HEAR FROM YOU . . .

. . . about What Future Steps Should Be Taken to Redesign Healthier, More Resilient Foodsheds for the Desert Southwest!

Over the last six months, we've been keeping our ears open so that we could offer you the most up-to-date accounts of the most exciting and delicious innovations in Southwestern foodsheds. Now, we want to hear from you about what you would like to see on the horizon over the next decade.

We see this publication not as the last word on the direction Southwestern foods are moving, but as a point of departure for communities that want to see their dreams manifested at the kitchen table, on favorite restaurant menus and on farms and ranches or in orchards and streams. We want to encourage you to talk with your neighbors, twitter or facebook your friends and discuss your reactions to the news here, with your family, around the table.

You may wish to consider:

1. Using this publication as the stimulus for a "town hall" gathering on the future of food in your community, inviting local farmers, ranchers, chefs and nutrition educators and giving them a forum to share their hopes and struggles.
2. Choosing one of the recommendations (pp. 24-33) and finding ways to advance it in your community, county or state.
3. Inviting Sabores Sin Fronteras/Flavors Without Borders founders Gary Paul Nabhan and Maribel Alvarez to facilitate a half-day workshop for your community or organization, where you lay out your vision for a more secure, delicious and nutritious food future.
4. Hosting a panel of our contributors at the next conference, symposium or festival that you help organize.
5. Collecting food memories and anxieties from elders and youth in your community, presenting them as oral histories in theatre, dance, photo exhibit, debate, film, sculpture, story or song.

6. Contacting your state governor, senators, congressmen or civic organizations and asking them to listen to what you think the most pressing or perilous issues facing our food systems are today.
7. Contacting us to provide a blog post of your own thoughts for potential inclusion on the Sabores Sin Fronteras or Borderlore websites.

We see this special publication as a precursor of a quarterly Edible Sonoran Desert magazine that will help us build and maintain stronger food communities in the Arizona-Sonora borderlands. We will be posting follow-up blogs and releasing op-eds on related topics over the next several months to keep this discussion moving in both Arizona and New Mexico. Email us at saboresinfronteras@gmail.com with your interest in receiving such publications, or future interest in writing, drawing or photographing for them!

In addition to visiting the Sabores Sin Fronteras/Flavors Without Borders website (saboresfronteras.org), we suggest you stay tuned in to the websites listed on the next page (as well actively engage in the many, fine, local organizations too numerous to list here), that present material of region-wide significance:

FURTHER WEBSITE READING

Sabores Sin Fronteras/Flavors Without Borders
saboresfronteras.org

Edible Communities
www.ediblecommunities.com

Edible Austin
www.edibleaustin.com

Edible Santa Fe
www.ediblecommunities.com/santafe



Edible Phoenix

www.ediblecommunities.com/phoenix

Southwest Center at the University of Arizona

swctr.web.arizona.edu

Borderlore

borderlore.com

Southwest Marketing Network

www.swmarketingnetwork.org

Farm to Table

www.farmtotablenm.org

Collective Heritage Institute—Dreaming New Mexico

www.dreamingnewmexico.org

Johns Hopkins Feast for the Future

www.jhsph.edu/caih

Traditional Native American Farmers Association

nativeharvest.com/tnafa

Community Food Connections

foodconnect.org

Quivira Coalition

www.quiviracoalition.org

Santa Cruz Valley Heritage Alliance

www.santacruzheritage.org

Baja Arizona Sustainable Agriculture

bajaaz.org

Southwest Grassfed Livestock Alliance

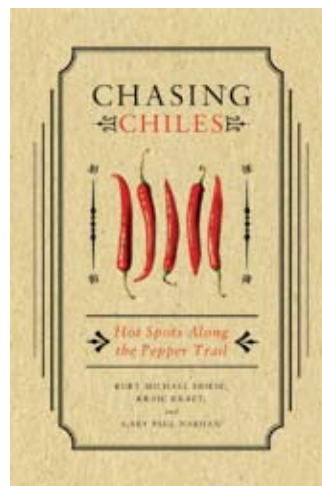
www.grassfedlivestock.org

Somos la Semilla

www.somoslasemilla.org

Chasing Chiles

The new book by Kurt Michael Friese,
Kraig Kraft, and Gary Paul Nabhan



*"A treasure trove of
chile lore and a wake-
up call to everyone
who cares about real
food"*

—Rowan Jacobsen

Coming in March 2011
Available now for pre-order at
www.chelseagreen.com

