

WHO ARE THE ORGANIC FARMERS OF TEXAS?



NATIONAL CENTER FOR
APPROPRIATE TECHNOLOGY

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PROJECT TEAM

Authors

Mike Morris
Robert Maggiani
ncatsw@ncat.org
1-866-319-1669

Researchers

Travis Schattle
Kevin Ellis
Justin Duncan

Layout & Graphics

Lillie Marquez
Debbie Rask
Amy Smith

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3040 Continental Drive
P.O. Box 3838
Butte, MT 59702-3838
1-800-ASK-NCAT
www.ncat.org



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Peggy Sechrist, Sechrist Ranch
Jennifer Tucker, Associate Deputy Administrator, USDA Agricultural Marketing Service
Paul Wolff, Policy Specialist, National Sustainable Agriculture Coalition

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EXECUTIVE SUMMARY

Organic farming in Texas has struck many observers as stunted or underdeveloped, but published estimates and descriptions of this sector have varied widely.

This report reviews all available USDA data—including newly available reports and tools—to arrive at an accurate picture of organic farming in Texas.

We conclude that there are at most 305 certified organic crop and livestock operations in Texas, although many of these are very small and probably less than 200 farms have sold any organic products at all in recent years.

About two thirds of these farms raise field crops and Texas is a national leader in organic cotton, rice, and peanuts, but Texas has a lower percentage of certified organic farms than any other state and the number of organic farms has not changed much in the past decade. Only 61 farms of any size are growing organic specialty crops. These farms are experiencing high turnover and their number may be decreasing.

The gap between consumer demand and the supply of Texas-grown organic food is wide and growing. Texas consumers spend over a billion dollars per year on organic food, and only a tiny percentage of this is grown within the state. This represents a large missed economic opportunity.

Around half of Texas producers are open to the idea of organic farming and thousands of farms are already using at least some organic methods. However, the higher prices for organic products alone have not been enough to convince most producers to become certified. They will need more technical and financial support from universities, agencies, and other institutions before they are willing to attempt the risky transition process.

Overall, the level of institutional support for organic farming in Texas is low compared to other states. While many resources already exist in the state, most of these are under-utilized.

Retailers can help by accepting the fact that organic produce grown in Texas will never be as cosmetically perfect as that grown in California. New crop insurance options for organic farms are an extremely promising development. There are many other steps that could be taken to stimulate the growth of the Texas organic sector.

INTRODUCTION

How many organic farms are there in Texas? Where are they located, what are they growing, and why aren't there more of them?

Published accounts and estimates have been “all over the map,” creating distorted or exaggerated images of the Texas organic sector. In this report we use new USDA data and tools to arrive at an accurate description of the number, location, and types of organic farms in Texas. We characterize the market for organic food products, survey resources available to support growth, and offer recommendations for enabling Texas organic farming to reach its full potential.

HOW MANY ARE THERE?

Counting farms is extremely difficult and not really an exact science. Farms often change names and owners. They may consist of geographically dispersed plots of land, some or all of which may be leased from other operators. It might not be obvious whether something is a farm or merely a garden. And determining that something is a farm requires knowing facts about business ownership and control that operators may be reluctant to disclose or just too busy to explain.

HOW MANY FARMS ARE THERE IN TEXAS?

The United States Department of Agriculture (USDA) defines a farm as “any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold” in a given year (NASS, 2012c).¹ Based on this definition, the most recent survey from USDA's National Agricultural Statistics Service (NASS) estimated that there were 248,809 farms in Texas, more than twice as many as any other state (NASS, 2012a).

This number may be somewhat deceiving, however, since almost three quarters of these operations were very small, selling less than \$10,000 per year in agricultural products. And about two thirds were livestock operations more commonly called “ranches” in Texas—often just a few cattle kept to qualify for low agricultural property tax rates.²

HOW MANY ORGANIC FARMS ARE THERE IN TEXAS?

In this report we use the term *organic* (or *certified organic*) to refer to agricultural operations that have gone through the regulatory process of the USDA's National Organic Program (NOP). Unlike legally meaningless terms such as “chemical free,” “all natural,” or “naturally grown,” the term “organic” is legally protected and its use requires meeting strict USDA standards (Baier, 2005).

The various USDA sub-agencies that report on farming are somewhat notorious for using different definitions, changing methods from year to year, and contradicting each other.³ Within the past ten years NASS estimates of the number of organic farms in Texas have ranged from 133 to 660 while NASS estimates of the number of farms transitioning to organic production have varied from 19 to 906.⁴ It's no wonder so many people are confused about the size of the Texas organic sector.

The most recent NASS estimate counted 178 certified organic farms in Texas in 2014 (NASS, 2016)⁵ while USDA's Agricultural Marketing Service (AMS) listed 305 organic operations in Texas in that same year (AMS, 2016). The discrepancy between these estimates was wider in the case of Texas than almost any other state and calls for some kind of explanation.⁶

HOW DO NASS AND AMS ARRIVE AT THEIR ESTIMATES?

NASS conducts a mail-out survey of farms—the *Census of Agriculture*—every five years, most recently in 2002, 2007, and 2012. In 2008, 2011, and 2014 NASS also did special surveys of organic farms.⁷ To correct for various errors and data gaps—the response rate was 63 percent in 2014—NASS uses complicated statistical methods.⁸

AMS runs the National Organic Program, maintains a registry of certified operations, and gets its information from the certifying agencies, which submit reports on the operations they have inspected. In 2015 AMS rolled out a new *Organic Integrity Database* that is edited directly by the certifying agencies.⁹

WHICH USDA ESTIMATE SHOULD WE BELIEVE?

Why are the NASS and AMS estimates for Texas so far apart? Here are three possible reasons:

There were somewhere between 178 and 305 certified organic livestock and farming operations in Texas in 2014.

In the overall picture of Texas agriculture, organic farms are needles in a very large haystack.

1. Information in the *Organic Integrity Database* is self-reported and not ordinarily checked by AMS for accuracy.¹⁰ There is considerable variation in how operations are described, including farms that appear to be listed multiple times and other anomalies related to ownership and control that could inflate the number of operations listed. Because of crop rotations and the need to plan for future contingencies, farms may be certified for crops that they are not currently growing.¹¹ We also found clear errors such as crops listed in the livestock category and vice versa.

2. The AMS *Organic Integrity Database* is not strictly a list of farms but a list of *operations*.¹² A farm can have more than one organic operation (such as crops and livestock) and sometimes these are listed separately in the database.

3. The NASS 2014 survey took place in the fourth year of a drought in Texas, and some farms may have reported no production, causing them to be left out of the NASS estimate of 178.¹³

Taken together, these three points seem to imply that the AMS estimate of 305 approximates the total number of Texas operations that were certified to raise organic crops and livestock in 2014, but the lower NASS estimate of 178 is probably closer to the number of farms that *actually grew and sold* these products in 2014.

In this report we sometimes use NASS and in other places use AMS as our source. Because neither NASS nor AMS provides complete data on crop acreage,¹⁴ we also sometimes rely on older reports from the USDA Economic Research Service (ERS). To avoid confusion, note that the NASS 2014 Organic Survey was published in the year 2016 and so is cited here as “NASS, 2016.”

WHERE DOES TEXAS RANK AMONG STATES?

Based on the NASS 2014 *Organic Survey*, Texas ranked #17 in the number of organic crop and livestock operations, #6 in total value of organic agricultural products sold (\$199 million) and #9 in total organic acreage (NASS, 2016).

While these rankings may sound good, organic farming is strikingly rare in relation to the total number of farms. Only about one in every 1,400 Texas farms is certified organic, a far lower percentage than in any other state. As shown in Table 1, the equivalent percentage is 50 to 100 times higher in strong organic states like California, Maine, or Vermont. In the overall picture of Texas agriculture, organic farms are truly needles in a very large haystack.

Table 1: Top states in number of organic farms

State	# Certified Organic Farms	% of Farms Certified Organic
California	2,632	3.38%
Wisconsin	1,128	1.62%
New York	855	2.41%
Pennsylvania	653	1.10%
Washington	643	1.73%
Iowa	593	0.67%
Vermont	506	6.90%
Ohio	499	0.66%
Minnesota	475	0.64%
Oregon	455	1.28%
Maine	444	5.43%
Michigan	288	0.55%
Indiana	251	0.43%
Illinois	215	0.29%
North Carolina	200	0.40%
Missouri	184	0.19%
Texas	178	0.07%

Source: NASS, 2016 (Table 28)

Table 2: Top states in certified organic acreage

State	Acreage
California	685,848
Montana	317,878
Wisconsin	226,056
New York	210,871
Oregon	203,555
North Dakota	134,632
Minnesota	131,239
Wyoming	128,502
Texas	125,373
Idaho	125,011
Utah	120,437
Colorado	114,750
Vermont	112,819
Nebraska	110,145
Iowa	97,186
Pennsylvania	96,958

Source: NASS, 2016 (Table 1)

MORE ABOUT TEXAS ORGANIC FARMS

When the average person pictures an organic farm they may think of a place that is growing fruits and vegetables. Most organic farms in Texas do not fit this image, as around two thirds of them grow mainly or solely field crops such as rice, hay, corn, wheat, peanuts, or cotton.

WHAT CROPS DO THEY GROW?

Some commonly grown crops are shown in Table 3 below. Note that many farms grew more than one of these crops.

Table 3: Some organic crops grown in Texas in 2014

Crop	# Farms
All field crops	118
All vegetables, potatoes, & melons	52*
Cotton	36
Rice	34
All fruits, tree nuts, and berries	26
Lettuce	20*
Herbs (fresh cut)	19*
Onions (all varieties)	19
Peanuts	19
Wheat (all varieties)	19
Tomatoes (fresh)	19*
Squash (all varieties)	18
Hay (all varieties)	17
Cabbage (all varieties)	16*
Corn for grain or seed	15
Bell peppers	13
Carrots	12
Chicken, layers	10
Garlic	10
Potatoes	10
Sorghum	10
Cattle & calves	9
Spinach	9
Snap beans	8
Watermelons	8
Broccoli	7
Pecans	7
Grapefruit	6

Source: NASS, 2016 (Chapter 2)

* Includes both open field and greenhouse producers. Some farms use both methods.

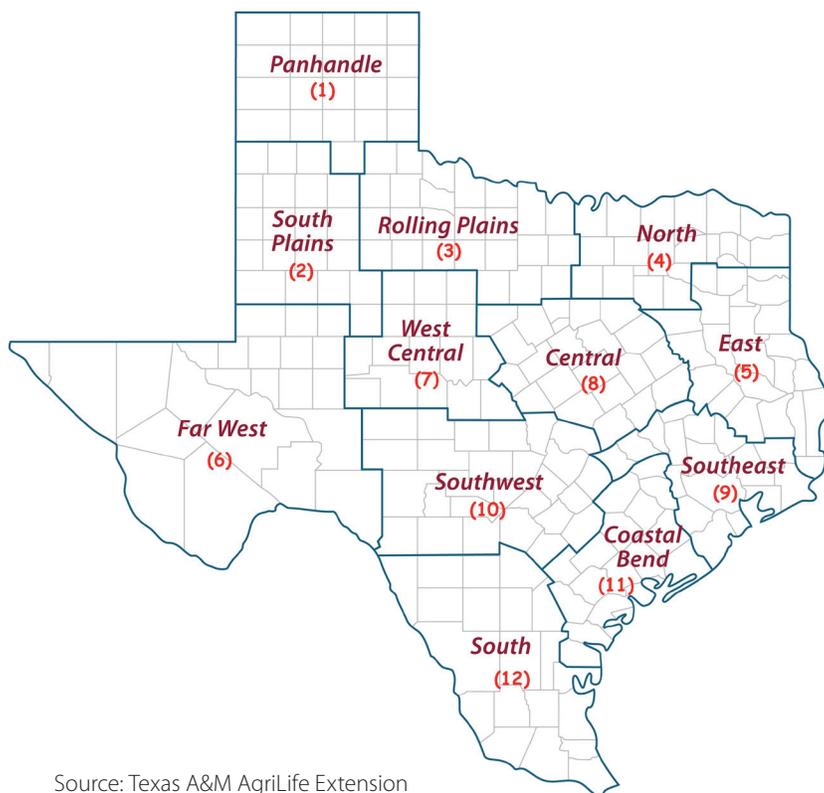
WHERE ARE THEY LOCATED?

Below are notes on a few important crops. Acreage is not reported for most of these crops by either NASS or AMS, so acreage information in this section comes from the USDA Economic Research Service (ERS,2013) and is based on the 2011 growing season.

Cotton: Texas grows almost all the organic cotton in the United States: with 10,807 acres making up 90 percent of U.S. acreage (ERS, 2013). The great majority of production takes place in Texas AgriLife Extension Service Districts #2 (South Plains) and #7 (West Central), where a rare combination of favorable factors includes low humidity (reducing pest and disease problems) and reliable frosts that kill cotton plants and desiccate the leaves without the need for chemicals. The Texas Organic Cotton Marketing Cooperative has about 40 members, many of whom have limited or no irrigation water, causing wide variations in yield from one year to the next (TOCMC, 2016). In addition to cotton, members also grow other certified organic crops such as corn, peanuts, wheat, or milo, and sell organic cottonseed to organic dairies as feedstuff.

Texas leads the nation in organic cotton, peanut, and rice acreage, but fruit and vegetable production is modest.

Figure 1: Texas AgriLife Extension Service District numbers



Source: Texas A&M AgriLife Extension

There are no organic beef slaughtering facilities in Texas, so organic cattle leave the state for processing or are sold at conventional prices.

Peanuts: Texas grew 4,825 acres of organic peanuts in 2011, 95 percent of all U.S. acreage (ERS, 2013). The 50+ farms in Texas certified to grow organic peanuts are mostly in Districts #2 and #7, where (as with cotton) low humidity allows peanuts to be grown without chemical fungicides.¹⁵

Rice: Texas ranked #1 in organic rice acreage (19,890) in 2011, accounting for 41 percent of U.S. acreage and slightly ahead of California (18,393 acres) (ERS, 2013). Organic rice is only grown in Districts #9 and #11 (Southeast and Coastal Bend). Production declined greatly during the 2011-2014 drought but has resumed.

Corn: In 2011 Texas grew 17,006 acres of organic corn, mostly in Districts #2 and #7 (South Plains and West Central), but also in District #11 (Coastal Bend) (ERS, 2013).

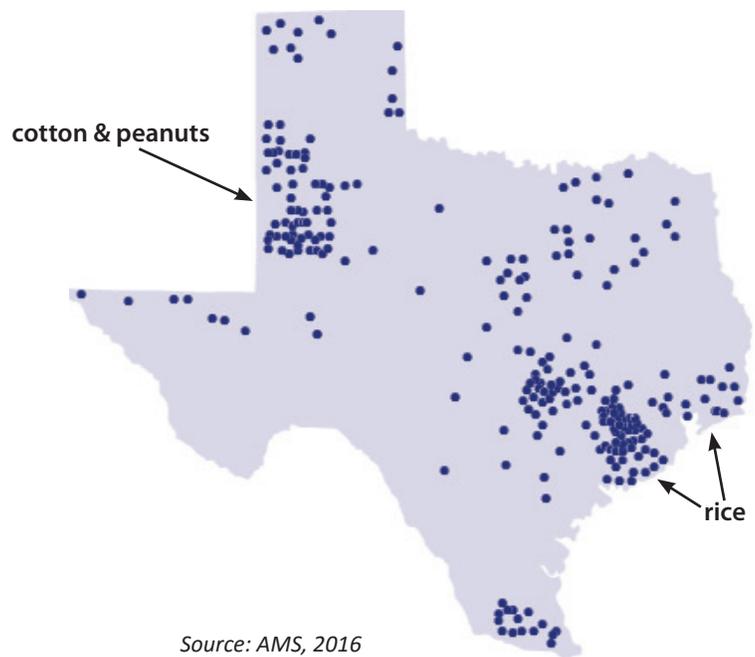
Wheat: In 2011 Texas grew 15,745 acres of organic wheat, about five percent of the nation's acreage. Organic wheat is grown mostly in Districts #1, #2 and #7 (Panhandle, South Plains, and West Central) (ERS, 2013).

Vegetables: In 2011 Texas reported just 1,335 acres of vegetable production (less than one percent of U.S. acreage), with most of this in Districts #10, #11 and #12 (Southwest, Coastal Bend, and South) (ERS, 2013). South Texas once provided a high percentage of the nation's vegetables during the winter, but global competition now makes fruits and vegetables available year-round from other places.

Fruit trees and tree nuts: In 2011 Texas had 3,826 acres of organic fruit trees and tree nuts. Almost all of this was pecans, with just 109 acres of peaches, cherries, and other stone fruits combined, along with 108 acres of citrus (ERS, 2013).¹⁶ Most production takes place in Districts #10, #11 and #12 (Southwest, Coastal Bend, and South), but there is also a sizeable acreage of organic pecans in Districts #6 (Far West) and #2 (South Plains).

Livestock: In 2011 Texas ranked #1 among states in number of organic beef cattle (45,790), #2 in organic sheep and lambs (837), and #4 in organic dairy cattle (24,101). Out of 31 Texas livestock operations listed in the AMS *Organic Integrity Database* at the time of publication, most are dairies (13) or egg-laying operations (12), along with a few producing broilers (5) (AMS, 2016).¹⁷ There are currently no organic beef slaughtering facilities in Texas, so organic beef cattle either leave the state for processing or are sold at conventional prices.¹⁸

Figure 2: Texas organic farms



HOW LARGE ARE THESE FARMS?

The NASS 2014 *Organic Survey* found that a quarter of the organic farms in Texas sold less than \$10,000 worth of organic products annually, while half of them reported organic product sales over \$100,000. Note that many farms sell a mix of organic and conventional products, so a farm selling less than \$10,000 worth of organic products is not necessarily a small farm.

Table 4: Organic product sales by Texas organic farms

Sales	# Farms
Less than \$1,000 ¹⁹	20
\$1,000 to \$2,499	12
\$2,500 to \$4,999	16
\$5,000 to \$9,999	11
\$10,000 to \$19,999	15
\$20,000 to \$24,999	1
\$25,000 to \$39,999	7
\$40,000 to \$49,999	9
\$50,000 to \$99,999	25
\$100,000 to \$249,999	38
\$250,000 to \$499,999	26
\$500,000 or more	54
TOTAL	234

Source: NASS, 2016

Includes both certified organic and exempt operations with organic product sales < \$5,000.

HOW MANY GROW SPECIALTY CROPS?

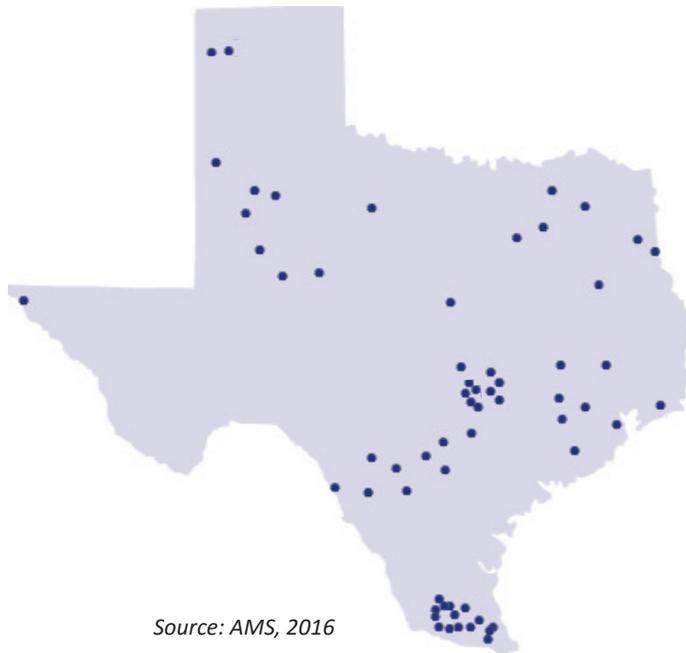
The term *specialty crop* includes fruits, vegetables, tree nuts, flowers, nursery plants, and honey. NASS does not track specialty crops as a category, and certifiers vary widely in the ways that they list these crops in the *Organic Integrity Database*. So it takes some interpretation to arrive at an estimate.

We went through the Texas operations in the *Organic Integrity Database* line by line, checked for obvious errors and duplicates, and then researched every likely specialty crop farm using farm websites, phone calls, and personal interviews.

Using this method (in August 2016) we found just 61 Texas farms certified by the USDA to grow organic specialty crops. They are shown in Figure 3 below (approximate locations) and listed in Table 5 on the following pages. These 61 farms—many quite small—represent the entire supply of certified organic fruits, vegetables, and tree nuts from the state of Texas. And there are currently only 40 farms of any size certified to grow organic vegetables.²⁰

Just 61 Texas farms—many quite small—represent the entire supply of organic fruits, vegetables, and pecans from the state of Texas.

Figure 3: Organic farms growing specialty crops



Source: AMS, 2016

Table 5: Texas organic farms growing specialty crops in 2016

Operation Name	Specialty Crops	City	Certifier
Abe Froese	Chiles, Jalepeños	Seminole	NMDA
Adams Blackland Prairie	Pecans	Ladonia	NICS
Aloe Laboratories, Inc.	Aloe Vera	Harlingen	TDA
Animal Farm	Vegetables (14)	Cat Spring	TDA
ANT JV	Peas	Shallowater	TDA
Apple Country Orchards	Apples, Peaches	Idalou	NICS
Benjamin T. Menix	Peas	Lamesa	TDA
Berry Best Farm	Blueberries	Larue	TDA
Burrill Farms LLC	Mixed Vegetables	Houston	OT
Constanzo Farms Inc.	Vegetables (7)	Atascosa	TDA
Country Grown Produce	Vegetables (20), Cantaloupes, Watermelons	Rock Springs	OCI
Day Star Organic Farm, LLC	Fruits, Mixed Fruit, Mixed Vegetables	Georgetown	CCOF
Doodley Dee's Farms	Vegetables (10)	Karnack	OCI
Dos Brisas Ranch	Fruits, Herbs, Vegetables	Brenham	QCS
Earth Harmony Organics	Vegetables (4), Fruit and Nut Trees, Berries	Huntsville	CCOF
Eugene Martinez	Vegetables (33), Fruits (4), Pecans	Pleasanton	NICS
Gearhart Farms	Grapefruits	McAllen	TDA
Genes Greens, LP	Vegetables (10)	Colleyville	TDA
Goebel Organics Inc.	Peas, Radishes, Rosemary	Colorado City	TDA
Gorma Organics	Green beans	Dalhart	NMDA
Green Gate Farms	Vegetables (40), Melons	Austin	NICS
Green Texan Organic Farms	Vegetables (11), Mushrooms	Plano	TDA
Gundermann Acres LLC	Vegetables (30), Cantaloupes, Watermelons	Wharton	TDA
H2O Organics	Vegetables (15)	Hockley	OCI
Hacienda Caujumulco	Pecans	Uvalde	AI
Hairston Creek Farm	Vegetables (20), Strawberries	Burnet	TDA
Jacky D Morrison	Vegetables (11), Cantaloupes, Watermelons	O'Brien	OT
Jeff Nickerson	Broccoli, Strawberries	Bryan	NICS
John L Lackey	Grapefruits, Limes	Weslaco	TDA
Johnson's Backyard Garden	Vegetables (55), Fruits (5)	Cedar Creek	NICS
Jones and Naegelian, JV	Green beans	Dilley	NICS

Source: AMS, 2016

Key to certifiers

AI = Americert International
 CCOF = California Certified Organic Farmers
 KBCS = Kiwa BCS Oko Garantie GmbH
 NICS = Nature's International Certification Services
 NMDA = New Mexico Dept. of Agriculture
 ONE = OneCert Inc
 OI = Organic Crop Improvement Association
 OT = Oregon Tilth
 PL = Primus Labs
 QCS = Quality Certification Services
 TDA = Texas Dept. of Agriculture.

Table 5: Texas organic farms growing specialty crops in 2016 (cont'd)

Operation Name	Specialty Crops	City	Certifier
KDJ Farms, LLC	Pecans	Canutillo	CCOF
L&L Farms LLC	Spinach	FrioTown	NICS
Larsen Farms	Potatoes	Dalhart	OCI
Leafy Creek Farm	Vegetables (33), Fruit (10), Pecans	Gustine	NICS
Mid Valley Agriculture, LLC	Vegetables (5)	La Feria	TDA
Mimosa Farms	Green beans	San Antonio	NICS
My Father's Farm	Vegetables (28), Cantaloupes	Seguin	CCOF
Onion Creek Farm	Vegetables (11)	Dripping Springs	TDA
Oportunidades Golpe Inc.	Watermelons	Meadow	TDA
Plantation Produce (PPC Farms)	Vegetables (10)	Mission	K BCS
Pure Luck Inc.	Vegetables (10), Fruits (5)	Dripping Springs	TDA
Rainbow Greens	Vegetables (14)	Austin	AI
Richard And Stacy Carter Farms	Avocados	Muleshoe	OCI
Rio Grande Organics	Pecans	Crystal City	QCS
Royal Pecans s LLC	Pecans	Eagle Pass	QCS
Ryan Farm	Black Eyed Peas	Big Spring	ONE
South Tex Organics LC	Vegetables (8), Fruits (3), Citrus (4)	Mission	TDA
Southeast Texas Olive	Olives	Winnie	CCOF
Strohmeyer Family Farm LLC	Citrus (6)	McAllen	TDA
Tecolote Farm	Herbs & Vegetables, Strawberries, Blackberries	Manor	NICS
Tenaza Organics	Vegetables (18)	Mission	NICS
Terra Preta Farm	Vegetables (35), Watermelons	Weslaco	NICS
Texas Hill Country Olive Co.	Olives	Dripping Springs	TDA
Texas Organic Mushrooms	Mushrooms	Denison	TDA
Thompson Citrus Grove	Grapefruits	Weslaco	NICS
Tim Miller	Vegetables (30), Fruits (5), Pecan	Kyle	NICS
Triple J Organics	Grapefruits, Oranges	Mission	TDA
Val Verde Vegetable Co. Inc.	Vegetables (4)	McAllen	PL
Whispering Hills Pecans Orchard Inc.	Pecans	Huntsville	TDA
Yahweh's All Natural Farm & Garden	Vegetables (27), Fruits (12), Citrus (5), Pecan	Harlingen	NICS

Source: AMS, 2016

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- AI = Americert International
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- PL = Primus Labs
- QCS = Quality Certification Services
- TDA = Texas Dept. of Agriculture.

SOME DEMOGRAPHICS

Demographic information about Texas organic farms is not always useful because it lumps together very different groups. Farms growing primarily field crops tend to be larger and sell mainly to wholesalers, while those growing specialty crops tend to be smaller and are more likely to sell directly to consumers.

The 2012 *Census of Agriculture* found that:

- 83% of Texas organic farmers were male and 17% were female.
- Their average age was 53.9.
- They had been on their present farm for an average of 16 years.
- 65% had farming as their primary occupation.
- 64% lived on the farm they operated.
- 55% worked 200 days or more off the farm.

There has been little growth in the number of organic farms over the past decade and high turnover among specialty crop farms.

Table 6: Years involved in certified organic production

	% of Farms
< 5 years	27
5 to 9 years	42
> 10 years	31
TOTAL	100%

Source: NASS, 2012

Table 7: Age of Texas organic farmers

Age	Percentage
Under 25	1.2%
25 to 34	7.2%
35 to 44	15.3%
45 to 49	9.0%
50 to 54	15.3%
55 to 59	18.5%
60 to 64	14.2%
65 to 69	9.8%
Over 70	9.5%
TOTAL	100%

Source: NASS, 2012

IS THE NUMBER OF ORGANIC FARMS INCREASING OR DECREASING?

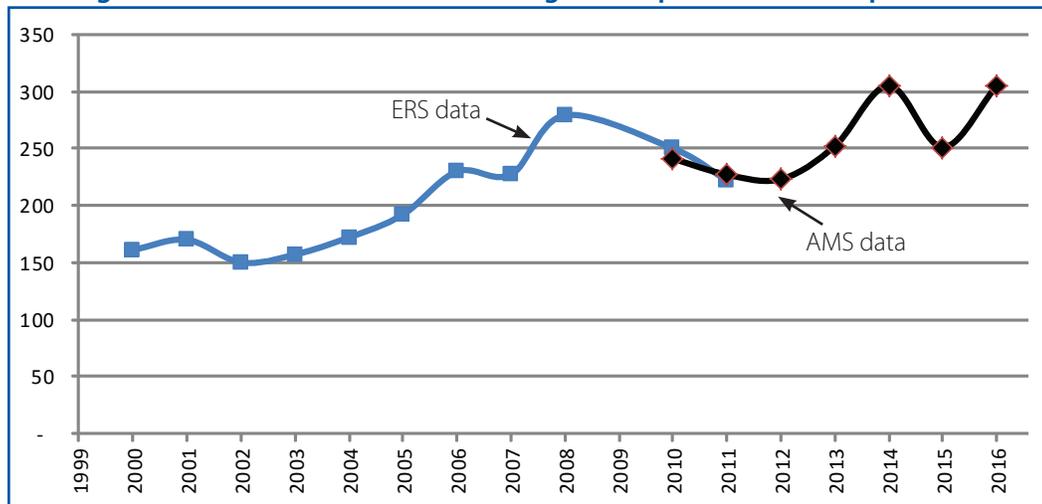
Figure 4 below shows the number of certified organic crop and livestock operations reported by ERS (from 2000 to 2011) and AMS (from 2010 to 2016). Because of comparability problems—such as changing reporting methods and definitions from year to year—these numbers must be viewed as only approximate, but they are all we have from USDA.²¹

Based on these numbers, there appears to have been consistent growth in the number of organic farms from 2000 through 2008, but little if any growth since that time. The number seems to have dipped and then recovered over the past decade, staying in the range of approximately 220 to 300.

We also looked closely at the number of organic *specialty crop* farms, and here we found evidence of a recent decrease. In an earlier review of AMS 2014 data, NCAT identified 75 certified organic specialty crop farms in Texas (Maggiani & Morris, 2015). Now we count only 61 of these farms—a decrease of 14 between 2014 and 2016.

Moreover, we learned that the turnover rate among organic specialty crop farms has been extraordinarily high. Just 33 of the 75 farms that we identified in 2014 AMS data—less than half—are still shown as growing specialty crops two years later in the AMS *Organic Integrity Database*. Between 2014 and 2016, 42 farms fell off the list of organic specialty crop farms and 28 new farms appeared on the list.²²

Figure 4: Number of Texas certified organic crop and livestock operations



Source: AMS and ERS (multiple years)

WHO CERTIFIES ORGANIC OPERATIONS IN TEXAS?

In 2015, 80 organizations were accredited by the NOP to issue organic certification to growers, processors, and handlers. Of these, 23 were active in Texas and are shown in Table 8.

Until recently the Texas Department of Agriculture (TDA) ran the most popular inspection program in Texas, but for the first time in 2015 Nature’s International Certifying Services certified the most organic operations (AMS, 2016). Within the past few years there has been a migration away from TDA and towards private certifiers.²³

Table 8: Certifying agencies active in Texas

A Bee Organic
Americert International
ECOCERT ICO
Global Organic Alliance, Inc.
Kiwa BCS Oko Garantie GmbH
Natural Food Certifiers
New Mexico Department of Agriculture
Oregon Tilth Certified Organic
Organic Crop Improvement Association
Quality Assurance International
SCS Global Services
Texas Department of Agriculture
Agricultural Services Certified Organic
CCOF Certification Services.
Global Culture
International Certification Services, Inc.
Mayacert S.A.
Nature’s International Certification Services, Inc.
OneCert, Inc.
Organic Certifiers, Inc.
Primus Labs
Quality Certification Services
Stellar Certification Services

Source: AMS, 2016

OPPORTUNITIES AND CHALLENGES

Texas retailers buy the vast majority of organic food from outside of the state, and the amount grown within Texas was described to us by one industry expert as “minuscule.” This represents a missed economic opportunity of epic proportions.

CONSUMER DEMAND

According to the Organic Trade Association (OTA), U.S. sales of organic food and non-food products have grown by double digits every year since the 1990s, reaching \$43.3 billion in 2015. About 83 percent of U.S. families now choose organic food at least sometimes (OTA,2015).

Texas represents an enormous market for organic food, with 27 million residents, four of America’s eleven largest cities (Houston, Dallas, San Antonio and Austin), and 33 other cities with at least 100,000 people.

The Food Marketing Institute estimates total 2015 U.S. grocery store sales at \$649 billion, with Texas making up 7.4 percent of this and produce department sales being 11.6 percent of all grocery store sales (FMI,2015). Based on these assumptions, we estimate total 2015 Texas grocery stores sales at \$48 billion and produce department sales at \$5.5 billion.

The Organic Trade Association claims that certified organic produce now accounts for 12 percent of produce department sales in U.S. groceries, whereas another industry research group (FreshLook Marketing) has calculated a lower estimate of 7.5 percent (Karst, 2016). Taking the lower estimate of 7.5 percent, we reach the conclusion that Texas consumers spent at least \$412 million on certified organic produce in grocery stores during 2015.

Note that this number includes only produce, which makes up somewhere around a third of all organic food sales (New Hope, 2015). Total consumer demand for organic foods in Texas is probably more than a billion dollars per year.²⁴

WHAT IS THE DOLLAR VALUE OF ORGANIC PRODUCTS?

In general, farms receive substantially higher prices for certified organic crops, although markets are volatile and there are wide variations between products (Post & Schahczenski, 2012).

Texas consumers spend more than a billion dollars per year on organic food.

For every certified organic farm in Texas, there are at least ten others using similar methods that could quickly become certified.

One recent study found that retail prices for organic foods in the grocery store were, on average, 47 percent higher than prices for equivalent conventional products. In some cases the organic prices were actually lower, while in other cases they were as much as 300 percent higher (Marks, 2015).

NASS does not report the dollar value of most individual organic crops for Texas because the number of farms growing them is so small. But according to the NASS 2014 Organic Survey:

- The total value of all organic field crops in Texas was \$55,694,172.
- The total value of all organic vegetables, potatoes, and melons in Texas was \$14,039,628 (open harvested and greenhouses combined).
- The total value of all organic fruits, tree nuts, and berries in Texas was \$4,160,052.

These estimates are self-reported by producers and should be treated cautiously, but again they show the dominant role of field crops in the Texas organic sector.

HOW DO ORGANIC FARMS MARKET THEIR PRODUCTS?

According to the NASS 2014 Organic Survey:

- 54% of certified organic farms reported that all sales were from organic production. The rest sold at least some conventional products.
- 25% of sales were local (within 100 miles), 54% were regional (100-500 miles), 20% took place nationally (over 500 miles away), and just one percent was international.
- 44 farms reported consumer-direct sales, 37 farms reported direct-to-retail/institution sales, and 146 farms reported wholesale market sales. (Many farms used more than one marketing method.)

WHAT ARE THE MAIN PRODUCTION CHALLENGES?

Well-established organic farms are resilient, productive, and highly reliable operations. but there is no question that organic farming is technically difficult, especially during the transition period and early years when farms are learning to adapt to local conditions. Weed and pest control are especially challenging.

Texas weather includes abrupt temperature swings, high humidity, high wind, and other factors that cause blemishes. It is nearly impossible for most growers to compete with California when it comes to growing cosmetically perfect fruits and vegetables.

Anecdotally we have heard many stories of Texas organic growers who were unable to sell their crops because they could not meet retailer grading standards.

Despite these significant challenges related to growing and selling crops, in the 2014 Organic Survey Texas farms rated "regulatory problems" as their number one challenge, meaning "excessive paperwork/record keeping, certification costs, etc." (NASS, 2016).

RESOURCES & GROWTH POTENTIAL

A large recruitment pool is available, consisting of thousands of farms that are open to the idea of organic farming and in many cases already using organic methods. There are also many financial and technical resources available that could support growth in the organic sector.

HOW MUCH ORGANIC PRODUCE CAN TEXAS GROW?

Texas has a long growing season and wide variations in climate and soils. With a few exceptions (such as avocados, pineapples, and head lettuce at certain times of the year), most fruits and vegetables commonly consumed in Texas can be grown within the state. In every month of the year harvests are taking place in some part of Texas.

Based on our experience, farm gate prices received by Texas growers are typically 55 to 60 percent of retail prices. So based on the calculation (above) that Texas consumers spend \$412 million per year on organic produce, the farm gate value of these products would be around \$220 million per year.

Keeping in mind the seasonal limitations on production of many crops, we estimate that Texas organic producers could grow at least half of the organic produce currently being purchased in Texas grocery stores, and possibly as much as three quarters. Based on these assumptions we arrive at a range of \$110 to \$165 million per year at farm gate prices.

Note that we are only talking here about fresh produce and not the field crops that make up the great majority of organic acreage and sales volume in Texas.

HOW MANY SUSTAINABLE FARMS ARE THERE IN TEXAS?

A large number of Texas farms take special environmental precautions and describe themselves with terms such as “chemical-free,” “low input,” or “certified naturally grown.” The term *sustainable* is often used to refer to these farms. Many are largely organic in their practices and could quite easily become certified.

The USDA makes no effort to count these farms, although the agency is officially supportive of sustainable agriculture.²⁵ While any estimate is bound to be little more than a guess, we believe there are at least 3,000 of these farms in Texas. The basis for our estimate is explained below:

First, there are 206 Texas farmer’s markets listed on USDA’s National Farmer’s Market Directory (AMS, 2016b), with about 2,500 registered sellers. We estimate that a quarter to a third of these are farms that could reasonably be classified as “sustainable,” amounting to 700 to 800 farms.

Second, the Local Harvest website lists 962 Texas farms, of which 820 represent their products as “naturally grown” (Local Harvest, 2016). Most of these 820 farms probably have a reasonable claim to being called “sustainable.”

Third, there is a sizeable group of farms that use broadly organic growing practices but do not show up on the either list above because they sell to wholesalers, restaurants, or direct to retailers.

And finally, there are several hundred farms that might be called “sustainable by default.” These farms use few if any purchased or off-farm inputs, mainly in order to keep their costs low. They may sell to friends or neighbors from the back of a pickup or through roadside stands.

Allowing for considerable overlap among these four groups, we arrive at 3,000 as a conservative estimate of the number of sustainable farms in Texas—around ten times the number of certified organic farms.²⁶

This estimate would be higher if it included organic gardens in Texas that have commercial aspirations, sell occasionally at a farmers’ markets, or barter with friends. A probably-increasing number of these are calling themselves “urban farms.”

ARE CONVENTIONAL PRODUCERS OPEN TO ORGANIC FARMING?

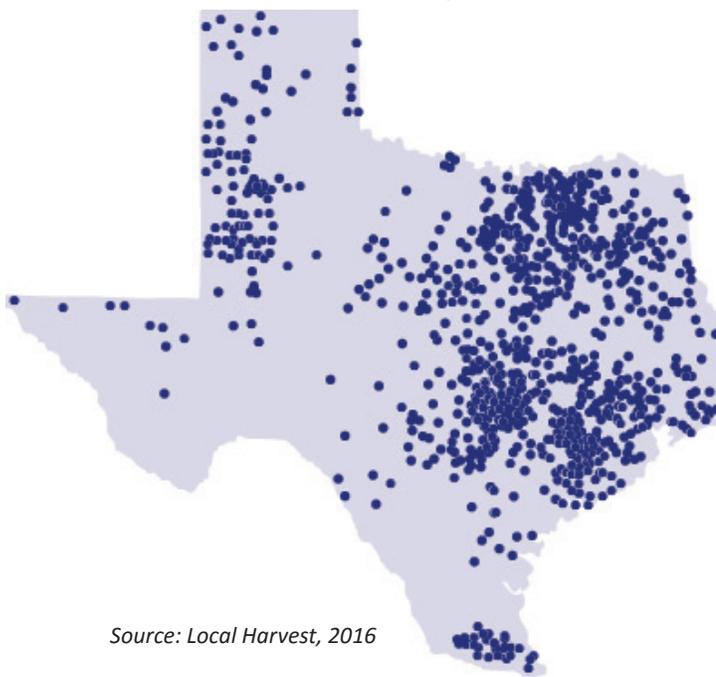
In a 2006-7 study, researchers at Sam Houston State University and the Texas Department of Agriculture surveyed a random group of 4,006 Texas farms, of whom 977 responded. The level of interest in organic farming was high, with 40 percent of fruit and vegetable growers and 36 percent of greenhouse/floriculture producers expressing “high interest.” About 45 percent of conventional farms were classified as having a “pragmatic” outlook, meaning that they “have no inherent opposition to organics” but “see conversion as a very risky decision.”

Noting that demand for organic products far exceeds locally-grown supply in virtually all states, the authors of the 2006-7 study concluded that higher prices alone are not enough to convince conventional growers to attempt the risky three-year transition phase without “tangible government support to convert to organics.”

Reinforcing the point that this kind of support is limited in Texas, about 80 percent of pragmatic conventional respondents reported “a lack of both informational and services support regarding organic production methods.” Only 11 percent of all respondents indicated that they “understood the process of organic certification” (Constance & Choi, 2010, pp. 171-182).

Around half of Texas conventional farmers have a pragmatic outlook and are willing to consider organic production.

Figure 5: Farms claiming “naturally grown” production



Source: Local Harvest, 2016

Texas has offered little training to its agricultural educators about organic farming.

HOW MUCH ORGANIC RESEARCH IS TAKING PLACE?

The importance of university research and extension to the growth of organic farming can hardly be overstated.²⁷ States with high numbers of organic farms almost always have at least one strong university research program. Examples:

- The University of California Sustainable Agriculture Research & Education Program, Agricultural Sustainability Institute, and Center for Agroecology & Sustainable Food Systems at UC-Santa Cruz, among many outstanding programs in California.
- North Carolina’s Center for Environmental Farming Systems, a collaboration between NC State University, NC A&T University, and the NC Department of Agriculture & Consumer Services. The Center includes an Organic Farming Unit.
- The Cornell Small Farms Program, which offers strong organic support to New York and the entire Northeast.

- The Center for Sustaining Agriculture and Natural Resources at Washington State University, which offers a major in Organic Agricultural Systems.

Texas does not have an organic research program comparable to these. However, a handful of university researchers have worked on organic farming and there are scattered efforts emerging around the state. Among the more innovative programs, the University of Texas Rio Grande Valley has recently started a research and teaching program in Agroecology. As part of this program, the SOAR Project (Subtropical Organic Agriculture Research), is involving students in applied research on local organic farms.²⁸

As an objective indicator of research activity on sustainable and organic farming in Texas, we looked at grants awarded by USDA’s Sustainable Agriculture Research & Education (SARE) program on a state-by-state basis. The results are shown in Table 9. While Texas has participated actively, it has not been a high-performing state, especially considering the large number of farms in the state.

Table 9: SARE projects funded in selected states 1988-2015

State	Total SARE funding	Total # projects	Research & Education projects	Professional Development projects	Producer-Led Projects
New York	\$15,324,590	448	88	37	92
North Carolina	\$10,762,480	186	50	24	53
Pennsylvania	\$10,620,711	240	53	25	93
Minnesota	\$9,164,890	235	60	24	111
California	\$8,803,968	137	47	26	42
Georgia	\$7,440,737	100	40	7	24
Massachusetts	\$7,156,632	176	41	13	75
Oregon	\$7,115,954	119	35	18	52
Washington	\$7,072,161	125	38	15	55
Vermont	\$6,998,904	205	39	17	88
Wisconsin	\$6,801,795	216	49	19	95
Iowa	\$5,750,701	167	46	15	72
Ohio	\$4,889,434	182	35	14	109
Maine	\$4,866,077	175	33	8	93
Texas	\$4,382,969	76	25	3	22
Florida	\$4,210,193	108	22	9	22
Alabama	\$3,132,671	69	18	8	17
Oklahoma	\$2,048,663	40	12	5	13
Tennessee	\$1,819,685	50	9	4	19
New Mexico	\$1,769,942	52	9	6	36
Mississippi	\$1,604,963	30	9	4	10
Louisiana	\$1,549,238	29	9	5	5

Source: SARE, 2016

In Table 9, the lack of training for agricultural educators in Texas is especially noteworthy. In the entire history of the SARE program there have only been three SARE “Professional Development” grants awarded to train Texas Extension and NRCS personnel about sustainable and organic farming methods.

WHAT FEDERAL PROGRAMS ARE AVAILABLE?

Numerous federal programs can be used to support organic farming research and development efforts²⁹ and most of these appear to be under-utilized in Texas. Here we mention just a few:

The Organic Certification Cost-Share Program of the USDA **Agricultural Marketing Service** (AMS) reimburses producers and handlers for up to \$750 of their certification costs. TDA opted not to participate in this program in some recent years but has now resumed its participation. In 2014 this program enjoyed good participation, with about 59 Texas organic farms taking part (NASS, 2016).

In addition to running a popular organic certification program, the Texas Department of Agriculture also administers the AMS Specialty Crop Block Grant Program, which can be used for research that benefits organic specialty crop growers.

The **USDA Natural Resources Conservation Service** (NRCS) supports organic farming through the Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program, and others. While NRCS offers an Organic Initiative as part of the EQIP program, just 10 Texas farms reported being enrolled in this program in the *2014 Organic Survey* (NASS, 2016). In 2013 NRCS offered statewide trainings on organic farming and certification for its Texas employees.

A number of loan programs offered by the **USDA Farm Service Agency** (FSA) are well-suited to the needs of organic farmers, particularly newer and smaller farms. In 2015 Texas led the nation in the number of loans awarded through FSA’s Microloan Program.

Many programs of **USDA Rural Development** are a good fit for organic producers, most notably the Value-Added Producer Grant program—which recognizes organic certification as a way of adding value to “raw” agricultural products.

USDA Rural Development also supports organic farming through its **ATTRA program**, which is run by the National Center for Appropriate Technology (NCAT) and is one of the oldest and best-known technical assistance programs for sustainable and organic farming nationally. Four ATTRA staff members work at NCAT’s office in San Antonio and are available to assist Texas producers and educators with any aspect of organic production, certification, business planning, or marketing.

WILL CROP INSURANCE BE A GAME CHANGER?

Crop insurance enables farms to survive disasters and is essential for access to many loans. Historically the crop insurance options available to organic farms have been limited and this has been especially true for specialty crop growers, who are often highly diversified.

For these reasons crop insurance programs have tended to make conventional farming look safer and more profitable than organic farming. The prospect of losing their crop insurance safety net has likewise discouraged many conventional growers who would otherwise love to farm organically.

This situation changed dramatically in 2015, when the **USDA Risk Management Agency** (RMA) began offering Whole Farm Revenue Protection crop insurance—tailored to the needs of diversified and organic farms—in many parts of the country. Hailed by many as creating a more level playing field, this new insurance option became available in every county in the nation on January 1, 2016 and 16 Texas farms purchased policies during the initial sign-up period.

The Risk Management Agency has improved access to crop insurance for organic farms in other ways too, such as increasing the number of crops for which “Organic Premium Price Elections” are available and expanding “contract price options” that allow organic farms to insure their crops at a higher level.

The availability of a new crop insurance safety net will encourage many growers to consider organic production.

The Texas Organic Farmers & Gardeners Association (TOFGA) serves the state's organic farmers.

WHAT ORGANIC FARMING ASSOCIATIONS EXIST IN TEXAS?

Texas has two main grassroots membership organizations that serve organic farmers: the Texas Organic Farmers and Gardeners Association (TOFGA) and the Farm and Ranch Freedom Alliance (FARFA).

The Texas Organic Farmers & Gardeners Association (TOFGA) aims to “educate producers and consumers on the many benefits of organic agriculture and to promote its use throughout Texas” (TOFGA, 2016). The Farm and Ranch Freedom Alliance (FARFA) is a national organization that does not focus exclusively on organic farms but “advocates for independent farmers, ranchers, livestock owners, and homesteaders, as well as the consumers who support them” (FARFA, 2016).

Both TOFGA and FARFA hold annual conferences and in recent years these events have drawn 250-400 people. Both organizations have paid executive directors but they are run mainly by volunteers.

For comparison, Table 10 lists 35 statewide organic farming associations. These vary widely in size, mission, and activities, but the largest and most successful groups attract 1,000-2,000 people or more to their conferences and have large paid staffs.

For example, the Pennsylvania Association for Sustainable Agriculture has 17 employees and has drawn over 2,000 people to its conference in recent years (PASA 2016). The website of the Maine Organic Farmers & Gardeners Association lists 36 employees and its annual fundraising event—the Common Ground Country Fair—routinely draws 60,000 people (MOFGA, 2016).

Table 10: Statewide organic farming organizations

Alabama Sustainable Agriculture Network
Community Alliance with Family Farmers (CA)
California Certified Organic Farmers
Carolina Farm Stewardship Association (NC & SC)
Colorado Organic Producers Association
Northeast Organic Farming Assn (NOFA) CT
Florida Certified Organic Growers & Consumers
Georgia Organics
Hawaii Organic Farming Association
Hoosier Organic Marketing Education (IN)
Louisiana Organic Association
Maine Organic Farmers & Gardeners Association
Maryland Certified Growers Co-operative
NOFA Massachusetts
Michigan Organic Food and Farm Alliance
Organic Growers of Michigan
The Alliance for Sustainability - MN
The Land Stewardship Project (MN)
MN Organic Farmers' Information Exchange
Missouri Alternatives Center
Missouri Organic Association
Nebraska Sustainable Agriculture Society
NOFA New Hampshire
NOFA New Jersey
NOFA New York
Ohio Ecological Food & Farm Association
Kerr Center for Sustainable Agriculture (OK)
Oregon Tilth
PA Association for Sustainable Agriculture
Pennsylvania Certified Organic
NOFA Rhode Island
Texas Organic Farmers & Gardeners Association
NOFA Vermont
Virginia Association for Biological Farming
Seattle Tilth (WA)

Source: Organic Consumers Association

RECOMMENDATIONS

In 2007 the Texas Department of Agriculture noted that “the number of certified organic operations in Texas has remained relatively stagnant while nationally the organic food sector has experienced double-digit growth” (York et al, 2007). Almost a decade later we find little evidence that this situation has improved. In fact, the gap between consumer demand and the supply of Texas-grown organic products is wider than ever.

The availability of premium prices for organic products has not been enough to entice most Texas growers to undertake the risky and difficult organic transition process. In order for this to happen there will need to be technical and financial support from Texas institutions and agencies at many levels. Here we offer some recommendations for accelerating this process:

- 1. Prioritize assistance to transitioning producers.**

Thousands of Texas farms are open to the idea of organic certification but understandably wary about the risks and uncertainties of the transition process. All agencies, educators, and other stakeholders should challenge themselves to reach out to these producers with information, technical assistance, and other resources that reduce the risk and uncertainty of the transition process and help these businesses access lucrative organic markets.
- 2. Launch a pilot “ugly produce” campaign.**

Texas is not California and never will be. The public might respond well to lower-priced Texas-grown organic produce that is not cosmetically flawless. Pilot campaigns of this kind are already underway in other states.
- 3. Help TOFGA build its capacity.**

Retailers can put TOFGA membership brochures at their checkout stands. Agencies can sponsor the annual TOFGA conference. TDA could provide conference-planning help, as the New Mexico Department of Agriculture has done for many years. For its part TOFGA needs to reach out beyond certified organic farmers. With only 61 organic specialty crop farmers in the entire state, TOFGA needs to recruit more farms from the large pool of producers who have a sustainable orientation but are not certified organic.
- 4. Commit far more university research and extension effort to organic production methods.**

The immense resources and talent of our public universities—especially Texas A&M and Prairie View A&M—need to be directed towards organic production. For example, the Texas A&M Vegetable & Fruit Improvement Center and the 13 AgriLife Experiment Stations should be doing more organic research.
- 5. Train agricultural educators about organic farming**

All 26 AgriLife Extension Horticulture Agents should be familiar with organic production and certification. The workplans of all extension agents could include at least one organic workshop or professional development activity per year. Training offered to NRCS personnel in 2013 was a good start but more is needed. NRCS is positioned to be a leader in expanding organic farming in Texas.
- 6. Train FSA staff and lenders about organic farming.**

FSA staff and commercial lenders should understand the organic standards, the transitioning process, and differences from conventional production that might create additional barriers for their loan applicants.
- 7. Allocate more TDA resources to organic farming and marketing research.**

For example, TDA could start a fund that would provide non-federal match dollars to non-profit organizations seeking USDA grants. TDA could earmark Specialty Crop Block Grant funds for the benefit of organic specialty crop production. And TDA must continue to apply for National Organic Program cost-share funds.
- 8. Get the word out about new crop insurance options for organic growers.**

All stakeholders should learn about these new options and get the word out to their members. Never before have so many organic and diversified farms in Texas had access to a federally-subsidized safety net. This is potentially a game-changer since it will reduce the risks for transitioning and newly-certified organic farmers.
- 9. Fund and build a statewide organic food hub.**

We have shown how this can be done in our *Feasibility Study for a Texas Organic Food Hub* (Maggiani & Morris, 2015). This is a model that deserves to be explored in Texas.
- 10. Promote awareness and usage of the ATTRA information service.**

All stakeholders should take full advantage of ATTRA’s resources, including its professional staff here in Texas, who welcome the opportunity to provide no-cost technical assistance to any producer or educator who is interested in organic and sustainable agriculture.
- 11. Replicate the SOAR Project.**

In its Subtropical Organic Agriculture Research (SOAR) partnership, the University of Texas Rio Grande Valley has proven that undergraduate students can learn about ecology on organic farms and conduct applied research that is helpful to organic producers. There is no reason why this program should not be replicated at colleges and universities across Texas.
- 12. Build a culture of coexistence.**

In Texas there is still an unfortunate tendency among educators and agency staff to view organic farming as something alien or unscientific that should be opposed or dismissed. In states with successful organic programs, conventional and organic farms have long since learned to coexist. There are many opportunities for learning and collaboration that have barely begun to be explored in Texas. As a start, many more AgriLife Extension and NRCS staff could attend the TOFGA and FARFA conferences each year: meeting the state’s organic producers and learning about their needs.

ENDNOTES

1. Note that USDA's definition of a farm requires products to be sold and not merely given away or consumed by the owners. The clause "or normally would have been sold" allows for crop failures and other business problems that temporarily cause sales to fall to low levels. See Appendix A to the *2014 Organic Survey, Census of Agriculture Methodology*, where NASS explains the elaborate processes it uses to identify and count farms and correct for various sources of error (NASS, 2012c).
2. As another indication that the estimate of 248,809 is inflated, in the same year (2012) only 135,969 Texas farms (55% of the NASS estimate) registered with the USDA Farm Service Agency as farms (FSA, 2012).
3. For a discussion of these problems see the May 10, 2016 blog from the National Sustainable Agriculture Coalition: "To Accurately Track Organic Sector Growth, Better Data Collection Is Needed" (NSAC 2016).
4. The estimate of 133 certified organic farms in Texas appeared in the NASS *2011 Certified Organic Production Survey* while the estimate of 660 was published in the *2007 Census of Agriculture Volume 1, Chapter 2: State Level Data* (Table 43). The estimate of 19 transitioning farms appears in the most recent *2014 Organic Survey* (Table 1), while the estimate of 906 transitioning farms appeared in the *2007 Census of Agriculture Volume 1, Chapter 2: State Level Data* (Table 43).
5. This estimate of 178 does not include so-called "exempt" operations, which are confusingly lumped together with certified organic farms in some but not all of the NASS statistics. Small farms selling less than \$5,000 per year in organic products are exempted from certification requirements and are allowed to call their products "organic" without a third-party inspection as long as they follow the standards of the National Organic Program. These farms are not allowed to display the USDA organic seal, however.
6. The NASS *2014 Organic Survey* estimated the number of Texas organic farms at 178 while the 2014 AMS estimate was 305, a difference of 127. Only two states (Wisconsin and Iowa) had larger differences and only one state (Oklahoma) had a higher ratio between these numbers. (For Wisconsin, Iowa, and Oklahoma, the NASS estimates were 1128, 583, and 35 respectively while the AMS estimates were 1310, 721, and 62.)
7. The 2014 survey included farms that were certified organic, exempt from organic certification, or had identified themselves as transitioning to organic certification. As explained in note 5 above, "exempt" farms are ones that follow the organic standards and sell less than \$5,000 in organic products per year but have not gone through USDA's certification process.
8. The survey response rate in Texas was 67 percent, slightly above the national average (NASS, 2016).
9. Besides NASS and AMS, other USDA sub-agencies also collect information about organic farming. For example, the USDA Farm Service Agency (FSA) requires all farms participating in its programs to submit annual reports on their crops and land uses, including descriptions of their organic farming operations. And the USDA Risk Management Agency collects information about the organic farms buying crop insurance. Until 2011, many reports on organic farming came from a third USDA sub-agency, the USDA Economic Research Service (ERS).
10. While the term "operation" is not (to our knowledge) defined in writing by AMS or NASS, it is used broadly to include not just crops and livestock production but also food handling, distribution, processing, packing, sales outlets, and the like.
11. Sometimes these discrepancies are dramatic. For example, the AMS list for 2014 shows 60 Texas farms certified to grow organic corn but NASS counted only 15 Texas farms actually growing organic corn in 2014.
12. Some fields are automatically validated for data quality purposes, but otherwise certifiers enter and edit their own data, which changes frequently, even day to day. The AMS does not become involved in the process unless someone contacts them with a complaint (e-mail from Jennifer Tucker, USDA Agricultural Marketing Service).
13. During the Texas drought many farms and ranches sold off livestock herds, converted crop fields to pastures, generated little or no income, or gave up trying to grow anything. The NASS *2014 Organic Survey* probably undercounted Texas operations meeting the strict USDA definition of "farm" because it excluded farms indicating "no production" during 2014, making no effort to determine if these farms "normally would have sold" crops or livestock. The wording and design of the survey may also have inadvertently encouraged farms to check the box indicating "no production" since doing so allowed them to skip to the end, avoiding the chore of filling out a lengthy 15-page survey. (This flaw has been corrected in the 2015 NASS survey, which asks for further explanation of reports of "no production.") NASS and AMS were also far apart in their estimates in 2011, the first year of the Texas drought. In that year NASS reported an extraordinarily low estimate of 133 certified organic farms in Texas (NASS, 2011) while AMS counted 227 farms. Again we speculate that NASS may have substantially undercounted Texas organic farms because many reported no production or sales.
14. The AMS *Organic Integrity Database* does not show acreage at all. The NASS *2014 Organic Survey* and *2012 Census of Agriculture* do not report data that, in NASS's judgment, "would disclose information about the operations of an individual farm or ranch." Acreage is suppressed and not shown for many crops, especially when only a few farms are growing that crop.

15. As shown in Table 3, NASS estimated that only 36 Texas farms actually grew cotton in 2014. But over 50 are listed in the AMS *Organic Integrity Database* as certified to grow cotton in 2014.
16. The ERS estimate of 108 acres of organic citrus is probably too low. A large organic citrus grower told us he has been growing at least 400-500 acres of organic citrus in recent years.
17. Some egg laying operations are also certified to sell hens for slaughter. Farms are allowed to slaughter up to 1,000 of their own chickens on site per year and market them as “processed from organically raised chickens.” However, the meat may not be sold as “USDA certified organic” unless the birds were processed in a USDA-certified slaughtering facility.
18. The only certified organic slaughtering facility in Texas currently listed in the AMS *Organic Integrity Database* is Dewberry Hill Farms, a small 20-acre poultry farm in Lexington, Texas.
19. Note that the 2014 *Organic Survey* included 20 Texas operations with sales of organic agricultural products less than \$1,000, even though the USDA requires a minimum of \$1,000 in sales for an operation to qualify as a “farm.” Some of these operations may have had additional sales of *non-organic* products bringing their total sales over \$1,000, while others may not meet the strict USDA definition of a “farm”.
20. We excluded from our list two operations that we knew to be purely non-commercial and therefore not “farms” according to the USDA definition. (These were Barr Mansion in Austin and the Agroecology Garden at the University of Texas Rio Grande Valley.)
21. For example, from 2000 to 2004 ERS did not include contracted growers in its estimate but in 2005 and subsequent years ERS began including “some contracted growers.” Both ERS and AMS reported estimates in 2010 and 2011, at which point ERS stopped. So the numbers shown in the graph from 2012 onward come from AMS, and were calculated by NCAT from the results shown in the *Organic Integrity Database*. There are many potential problems of comparability between years, including possible methodological differences between ERS and AMS. There are also, of course, many potential errors in the self-reported numbers from certifying agencies in the *Organic Integrity Database*.
22. Finding this high turnover rate initially incredible, we looked more closely at the 42 farms that dropped off the list and confirmed that this number is believable. We learned that 20 farms surrendered their certifications, five were suspended, and five are still certified but no longer shown as growing specialty crops. The remaining 12 have been deleted from the AMS list and we presume that most surrendered their certifications or stopped farming. Of the 28 new farms, 16 were certified for the first time between 2014 and 2016. The other 12 were already certified organic in 2014 but were not shown by AMS as growing specialty crops during that year. Some farms grow specialty crops sporadically, in certain years and not others. The *Organic Integrity Database* only lists the crops in a farm’s Organic System Plan for the current year.
23. For example, of the 20 certified organic specialty crop farms that surrendered their certificates between 2014 and 2016, 17 were certified by TDA. And of the 16 specialty crop farms certified for the first time between 2014 and 2016, only two were certified by TDA (NASS, 2016).
24. Even this estimate of \$1 billion is still too low because it includes only food products bearing the USDA organic seal. There are many other foods that contain organic ingredients but do not reach the threshold (95% organic ingredients by weight) entitling them to display the USDA seal.
25. The USDA defines sustainable agriculture as
“an integrated system of plant and animal production practices having a site-specific application that will, over the long term: (1) satisfy human food and fiber needs; (2) enhance environmental quality and the natural resource base upon which the agricultural economy depends; (3) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; (4) sustain the economic vitality of farm operations; and (5) enhance the quality of life for farmers and society as a whole (USDA-OCE, 2007).”
26. The number of farms using organic practices but not certified may be considerably higher. For example, of the producers who responded to the 2006-7 survey by the Texas Department of Agriculture and Sam Houston State University, eight percent described themselves as “non-certified organic” (York et al, 2007).
27. Noting that “uncooperative and uniformed extension agents” and “bias against organics” have been viewed by farmers as the greatest constraint to organic conversion in countries around the world, Constance & Choi call for “USDA and the Land Grant system to increase their attention and resources to this issue” (Constance & Choi, 2010).
28. Disclosure: NCAT is a major partner in the SOAR Project. Funding to develop this publication came from the Organic Transitions Program of the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award #2013-51106-20970.
29. For a complete list of USDA programs that support organic farming see *USDA Resource Guide 2015: Your Guide to Organic and Organic-Related USDA Programs* (USDA, 2015).

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