

Locally Grown



LEVEL: Grades 4 -12

SUBJECTS: Language Arts, Science, Social Studies, Health and Math

AZ ACADEMIC STANDARDS: Measurement & Data, Expressions & Equations, Ratios & Proportional Relationships, Quantities, Mathematical Practices, Listening/Speaking, Reading Process, Comprehending Informational Text, Inquiry Process, Life Science, Geography, Economics and Health.

MATERIALS

Map of Arizona with counties outlined and major cities indicated, "Arizona Food Produced Instate More Common" article from Nov. 28, 2010 article in *The Arizona Republic* newspaper, **Crops by County in Arizona** table from USDA 2007 Census of Agriculture, "The Rise of the Locavore" article in the May 20, 2008 *Bloomberg Businessweek* magazine, **MyPlate** template, and lined writing paper.

VOCABULARY

Commodities, Locavore, Arizona Grown, Agriculture

RELATED LESSONS

<http://cals.arizona.edu/agliteracy/lessons.htm>

- A is for Apple
- Arizona! How the Heck Did I End Up Here?
- Can You Walk On Eggs?
- Pecan Power
- To Bee Or Not To Bee
- Let's Make Stew
- Let Us Learn About Lettuce

SUPPORTING INFORMATION

Agriculture provides for our basic needs of food, clothing and shelter. Nature provides the other basic need of water. Many people have made the decision to find out where and how the food they eat is grown.

Arizona's geography and climate make it an ideal state to grow a variety of fruits, vegetables, nuts, beans, and grains, as well as raise meat animals, dairy and eggs for our consumption.

Arizona has 15,637 farms and ranches and 99.3% are family owned. A majority, 84.3%, are 99 acres or less. Seventy-seven of the farms/ranches are certified organic.

The local food movement, locavore, is on a steady upward trajectory. Consumers want to meet the person who grew their food. The USDA farm bill has provided \$2.3 billion for research to help small growers, and improve their access to farmer's markets.

Students can look at careers in agriculture while they learn about the industry. Many people view agriculture as the farmer or rancher growing a crop or raising livestock. There are many more jobs in the food industry including scientists, veterinarians, marketing, managers, nutritionists, range management, lawyers, health inspector, researcher, packer, and statistician to name a few.

GETTING STARTED

Make copies of the Arizona map and the Crops by County in Arizona" census data. For older students provide the newspaper articles for discussion. Provide computer access to www.myfoodapedia.gov for students to use after they create their meal.

BRIEF DESCRIPTION

Students will plan a nutritious, low calorie meal and learn which foods in that meal are grown in Arizona.

OBJECTIVES

Students will:

- Plan a meal.
- Investigate if any of the items are grown in Arizona
- Explore the geography of the state to learn why agriculture products grow at a particular climate and elevation.
- Evaluate if the meal is nutritionally healthy.
- Discuss careers needed to develop, grow, harvest and provide those food items for their use.

ESTIMATED TEACHING TIME

30 - 45 minutes per session

GETTING STARTED(cont'd)

Make copies of the MyPlate template and the food groups explanation, <http://www.choosemyplate.gov/foodgroups/index.html>.

PROCEDURES

Session One

1. Have students work in teams of four to plan a healthy favorite meal.
2. Do not limit the items they can have in their meal.
3. The meal needs an appetizer, main course, beverage and dessert. Discuss with younger students what is meant by an appetizer.
4. The main course should include a protein plus fruits and/or vegetables. It can also include grains and dairy.
5. Ask students to write down every food item needed to prepare their meal. For example, if they want pizza for their main course they need all necessary ingredients for the dough, sauce, and toppings including seasoning.
6. Homework for younger students is to ask them to share the written meal plan with their parents/guardians to make sure they have included all necessary ingredients.

Session Two

1. Students will stay in the same team and use "Crops by County in Arizona" census data to determine which ingredients needed to prepare their meal are produced in Arizona.
2. They need to write down the county(ies) in which the item is produced.
3. Ask students to find those counties on their Arizona map. Many items are produced in multiple counties.
4. Ask older students to look at where items are produced in Arizona and then discuss why one item may be grown in a certain area. Answers may range from soil, elevation,

water availability and/or climate as examples.

- 5 - Use the term Locavore and ask them what they think it means. (*A Locavore is a person who wants to purchase items that are grown or produced locally.*)
- 6 - Ask if their meal can be considered a Locavore meal? Ask them to explain why they think it is locally grown. Ask them what they consider locally grown. (Some define local as within 50 miles radius of the home and others define it as within state boundaries.)
- 7 - Ask them if they can make changes to their meal to have it be predominantly made from food items grown locally.
- 8 - Ask if they realized how many different food items were grown in Arizona?

Session Three

- 1- Re-assign the teams so only one person from any team that participated in Session 1 is in a new five member team.
- 2 - Members will share the main course their team in Session 1 planned.
- 3 - Teams should choose one main course from those five options and research the nutritional aspects of the main course.
- 4 - Ask them to look at the MyPlate template to choose a main course that uses the majority of the required items of fruit, vegetables, grains, protein and dairy.
- 5 - Ask them to choose a main course that they think would have the least amount of calories.
- 6 - Have them write down what they guess the total calories would be for the main course.
- 7 - Provide computer internet access to the teams.
- 8 - Using the website www.myfoodapedia.gov have the teams determine the total calories for their main course.

How close was their calorie guess?

- 9 - Ask teams to report the total calories for the meal along with the food groups included in the main course.
- 10 - The team with the lowest calories and most balanced meal should share the main course description with the class.

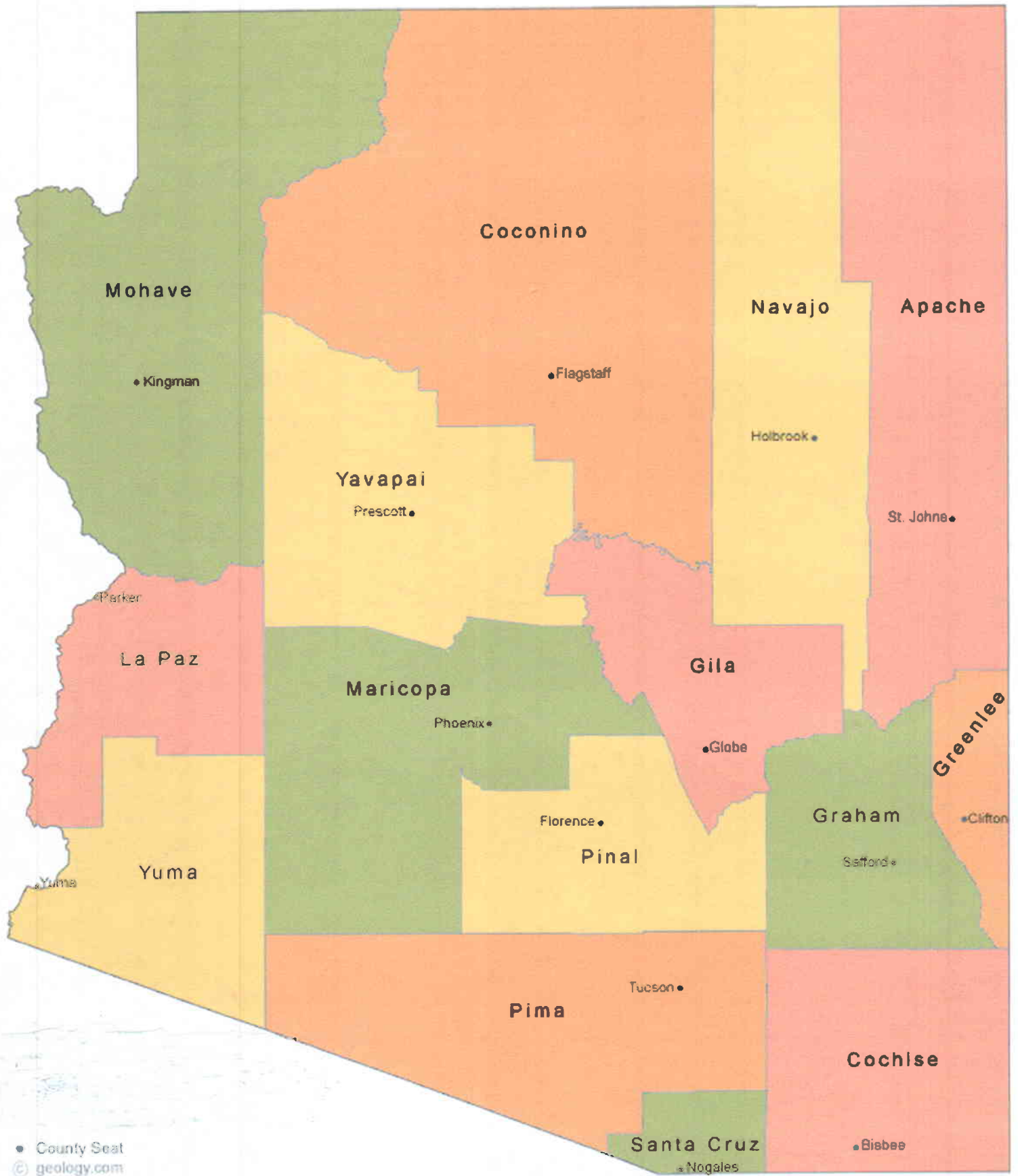
EVALUATION OPTIONS

- 1 - Ask students to name ten food items grown in Arizona.
- 2 - Ask students to research one AZ grown food item and determine the scientific reason(s) it can be grown in Arizona.
- 3 - Ask students to plan a menu that is nutritionally balanced and low in calories.
- 4 - Have students list 10 food items grown in their county that they have never eaten.

EXTENSIONS AND VARIATIONS

- Have students go to the grocery store and determine if they can find Arizona Grown items.
- Have students attend a farmer's market and ask if they would want to purchase food items there. Ask them to have a conversation with the person selling the food item to find out how it is grown.
- Have students look at a processed item such as a jar of salsa and determine the number of jobs needed to produce the salsa. Make sure they include farmer, farm employee, nutritionist, trucker, marketing, grocery store employee, as well as label designer and jar manufacturing.

CURRICULUM DESIGN
Monica Kilcullen Pastor
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Maricopa County



Arizona Food Produced In-state More Common

by Megan Finnerty and Richard Ruelas - Nov. 28, 2010, 12:00 AM, *The Arizona Republic*

It's easier than you may think to eat locally produced food in Arizona, particularly at this time of year.

The "eat local" idea has long been associated with Saturday morning markets, specialty grocers and concept restaurants. But harvest season – that's now, in our desert climate – means produce aisles in nearly any grocery are stocked with locally grown food.

Shoppers can leaf through greens at Bashas', pick through the pomegranates at Whole Foods Market and browse the cabbage at Safeway. They can be confident that though the food isn't always marked or marketed as local, much of it comes from farms in the state.

Grocery stores aren't the only ones with local food. Order a foot-long at Subway or a salad at Chili's and you're almost certainly getting local lettuce this time of year.

Most of the milk and eggs we consume year-round also come from local suppliers.

Eating local food is an idea pushed by advocates for small farms and environmentalists who want to reduce the pollution associated with shipping food. The movement spawned the term "locavore."

True locavores generally pledge to eat only foods produced within 100 miles. More broadly, the government allows labeling agriculture local if it is produced within the state.

"People are consuming more local products than they think they are," said Sandy Kelley of Shamrock Farms, the Phoenix-based dairy that supplies much of the Valley's milk.

This time of year, Safeway stocks about 27 Arizona-grown items in the produce section. Bashas' supermarkets, including AJ's Fine Foods and Food City, offer a comparable number. Whole Foods Market offers slightly less in the produce section.

Not all are labeled as such because stores can't guarantee items are from Arizona, although for most leafy greens, according to the Arizona Farm Bureau, the chances of it being from the state are about 85 percent.

And consumers put off by higher prices for boutique items from local farms should know that "local" doesn't mean "luxury." At grocery stores, in-season produce is typically priced to move.

Restaurant suppliers including U.S. Foodservice, Shamrock Farms and Sysco aren't stocking local ingredients because it is trendy but because it reduces shipping cost.

At the grocery store

It's rarely obvious that grocery-aisle produce is local.

Only Bashas' and Whole Foods Markets reliably label Arizona-grown items. But Safeway spokeswoman Cathy Kloos said the chain has plans to start.

Bashas' started posting grown-in-Arizona signage about three years ago and saw an immediate bump in sales.

Jack Armstrong, Bashas' senior produce buyer, said customers "seem to be happier when they see it's from their own backyard." And it's more efficient.

"It can be in my warehouse in less than a day, sometimes a few hours," he said.

Armstrong adds two or three new growers to his stores each year, although few farmers and food makers in the state have a large enough production capacity to serve the chain.

The meat aisle is more complicated. A great portion comes from major producers in the Midwest, according to Shamrock Foods, the largest distributor in the state.

But the Arizona Beef Council says state ranches produce enough beef to supply 5.6 million residents. It is not clear where all of that beef goes, though. Basilio Aja, executive director of the council, said about 50 percent of beef consumed in the state is from Arizona.

Bashas' partnered with Local First Arizona, an organization that promotes Arizona-based businesses, to develop labels for items ranging from tomatoes from Sunizona Family Farms in Willcox to My Nana's Tortilla Chips from Phoenix.

The move appeals to Jennifer McHenry, 36, of Mesa. She shops for locally grown produce at Whole Foods and Sprouts Farmers Markets.

A mother of two, she tried shopping at farmers markets near her home, but ran out of time for those special trips.

"If more places used local labels, it would be an incentive to shop in mainstream markets," she said.

Darcy Landis works with about 200 local vendors to stock five Whole Foods stores with a range of products including chocolate, skin cream, produce and salsa.

Landis, Whole Foods' "metro forager" for Arizona and southern Nevada, is most proud to offer shoppers Black Sphinx dates, grown only in Phoenix's Arcadia neighborhood, harvested from privately owned trees. The thin-skinned, sweet dates have a cult following.

"They are, in my opinion, the best dates you can get," Landis said. "And through November and December, they're really fresh."

When shopping for staples, nearly every Arizonan buys local eggs and milk.

Hickman's Egg Ranch and the Shamrock Farms dairy supply a large portion of grocery stores' egg and milk supply, whether branded as such or not.

Cartons may not be labeled as local to allow both companies the flexibility to add in non-Arizona milk or eggs if needed.

But both companies say that is not common.

Eating out

Restaurant suppliers including U.S. Foodservice and Shamrock Foods also stock Arizona ingredients to keep costs down.

"It just makes good sense from a business standpoint," said Rob Ahrensdorf of Shamrock Foods, the largest restaurant supplier in the Valley. Shamrock Farms is an affiliate of Shamrock Foods.

Shamrock's customers include Subway, Applebee's and Chili's.

"There are times you're going to be buying local because that's when it's on the trees, that's when it's coming from the ground," Ahrensdorf said. "It's less expensive because they're not trucking it from Chile."

The egg market, over the past decade, has been increasingly dominated by Hickman's, located in Buckeye and Maricopa. Nearly every restaurant or institutional kitchen gets eggs from Hickman's, said Clint Hickman, the family-owned company's vice president of sales and marketing.

"You have to go to great extremes to not eat a Hickman's egg," he said.

In mid-November, lettuce pickers dismantle their operations in central and northern California and move them to Yuma. From that time until the growing season ends in April, it's almost certain that all lettuce served in restaurants is from Arizona.

Still, true locavores will take the extra effort to find leafy greens grown as close to home as possible.

"People are always so surprised that we have so many farms in the Valley," said Pamela Hamilton, publisher of the quarterly locavore guide *Edible Phoenix*.

"This time of year, all the greens we have growing, spinach, kale, mustard greens, they're really lovely. And they're the vegetables that lose the most nutrients when they're shipped from far away."

Whether a restaurant chooses to trumpet local ties, though, is up to each owner.

Foodie places like FnB in Scottsdale and Quiessence in Phoenix reprint menus often to highlight in-season produce.

Others push value. The fact that they serve local greens for a few months is merely circumstantial.

Hamilton welcomes the extra seasonal members into the local food movement, even if most are unknowingly joining.

"People shop local for a bunch of different reasons," Hamilton said. "If you're doing it for economic reasons, Yuma lettuce or Hickman's Eggs are great . . . If you're doing it because you're supporting small farmers or want to eat organically, you might make other choices."

Crops by County in Arizona (2007 Census of Agriculture)

	Apache	Cochise	Coconino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	SantaCruz	Yavapai	Yuma
almonds				X				X	X	X			X	X	
apples	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
apricots	X	X	X					X	X	X			X	X	
artichokes										X	X				X
asparagus										X	X			X	
avocados								X							
barley	X	X			X		X	X		X	X	X		X	X
beans	X	X	X		X			X		X	X	X	X		
beef	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
beets	X	X	X	X				X		X	X	X		X	
bell peppers	X	X	X	X					X	X	X	X		X	
bison								X	X						
blackberries		X		X				X		X	X			X	X
blackeyed peas		X													
blueberries		X													
boysenberries		X													
broccoli	X	X		X			X	X		X	X	X			X
brussels sprouts		X													X
cabbage	X			X				X		X	X	X			X
cantaloupes	X	X	X	X	X		X	X	X	X	X	X	X	X	X
carrots	X	X	X	X				X	X	X	X	X	X	X	
catfish								X							
cauliflower	X			X				X		X	X	X			X
celery													X		X
cherries(sweet)	X	X	X	X	X				X	X	X				
cherries(tart)	X	X	X		X					X			X	X	
chicken	X	X			X			X		X	X		X		
collard greens		X						X							
corn grain		X	X		X	X		X		X	X	X	X	X	X
cotton seed products															
cucumbers	X	X	X	X	X			X	X	X	X	X	X	X	
dairy	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
dairy goats		X	X		X			X	X	X	X	X	X	X	X
dates								X							X
deer				X											
ducks	X	X	X	X				X		X	X	X		X	
eggplant		X	X	X							X	X		X	
eggs	X	X	X	X	X			X	X	X	X	X	X	X	X
emus		X			X			X				X		X	
escarole & endive															X
figs								X	X					X	
fruits(greenhouse)												X			
garlic		X		X	X		X			X	X	X		X	

	Apache	Cochise	Coconino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	SantaCruz	Yavapai	Yuma
shrimp								X				X			
snap beans	X	X	X	X				X		X	X	X		X	
sorghum		X					X	X			X	X			X
spinach		X						X		X	X	X			X
squash	X	X	X	X	X			X	X	X	X	X	X	X	
strawberries		X						X		X				X	
sweet corn	X	X	X	X	X			X		X	X	X		X	X
sweet potatoes											X				
tangelos								X	X	X		X			X
tangerines								X		X	X	X			X
tomatoes(field)	X	X	X	X	X			X	X	X	X	X	X	X	X
tomatoes(greenhouse)		X			X						X	X		X	X
trout			X			X			X	X				X	
turkeys	X	X	X	X				X	X	X	X	X	X	X	X
turnip greens				X				X			X	X			X
turnips		X		X				X		X	X	X	X		
vegetables(greenhouse)		X			X			X		X	X	X		X	X
walnuts		X				X								X	
watercress	X									X					
watermelons	X	X	X	X	X		X	X		X	X	X	X	X	X
wheat grain		X			X		X	X	X		X	X			X



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TOP NEWS May 20, 2008, 10:10PM EST

The Rise of the 'Locavore'

How the strengthening local food movement in towns across the U.S. is reshaping farms and food retailing

by Pallavi Gogoi

Drive through the rolling foothills of the Appalachian range in southwestern Virginia and you'll come across Abingdon, one of the oldest towns west of the Blue Ridge Mountains. If it happens to be a Saturday morning, you might think there's a party going on—every week between 7 a.m. and noon, more than 1,000 people gather in the parking lot on Main Street, next to the police station. This is Abingdon's farmers' market. "For folks here, this is part of the Saturday morning ritual," says Anthony Flaccavento, a farmer who is also executive director of Appalachian Sustainable Development, a nonprofit organization working in the Appalachian region of Virginia and Tennessee.

It's a relatively recent ritual. Five years ago, the farmers' market wasn't as vibrant and it attracted just nine local farmers who sold a few different kinds of veggies. Today, there's a fourfold jump, with 36 farmers who regularly show up with a dizzying array of eggplants, blueberries, pecans, home-churned butter, and meat from animals raised on the farms encircling the town. It's a sign of the times: Hundreds of farmers' markets are springing up all around the country. The U.S. Agriculture Dept. says the number of such markets reached 4,692 in 2006, its most recent year of data, up 50% from five years earlier. Sales from those markets reached \$1 billion.

NEW NICHES

The rise of farmers' markets—in city centers, college towns, and rural squares—is testament to a dramatic shift in American tastes. Consumers increasingly are seeking out the flavors of fresh, vine-ripened foods grown on local farms rather than those trucked to supermarkets from faraway lands. "This is not a fringe foodie culture," says Flaccavento. "These are ordinary, middle-income folks who have become really engaged in food and really care about where their food comes from."

It's a movement that is gradually reshaping the business of growing and supplying food to Americans. The local food movement has already accomplished something that almost no one would have thought possible a few years back: a revival of small farms. After declining for more than a century, the number of small farms has increased 20% in the past six years, to 1.2 million, according to the Agriculture Dept.

Some are thriving. Michael Paine, 34, who started farming in 2005 on just one acre in Yamhill, Ore., today has six acres of land and 110 families who buy his lettuce, cabbage, peppers, and eggplants. "I like to surprise my families with odd varieties of tomato or an odd eggplant variety, and they love it," says Paine.

Patrick Robinette saw a growing interest among Americans in specialty beef, and in 2001 started raising 10 cows at Harris Acres farm in Pinetops, N.C. Soon his grass-fed beef was in high demand. He now raises 600 head of cattle and delivers beef to the North Carolina governor's mansion. He has standing orders from 37 restaurants, three specialty stores, and six cafeterias.

LARGE RETAILERS ACT

The impact of "locavores" (as local-food proponents are known) even shows up in that Washington salute every five years to factory farming, the Farm Bill. The latest version passed both houses in Congress in early May and was sent on May 20 to President George W. Bush's desk for signing. Bush has threatened to veto the bill, but it passed with enough votes to sustain an override. Predictably, the overwhelming bulk of its \$290 billion would still go to powerful agribusiness interests in the form of subsidies for growing corn, soybeans, and cotton. But \$2.3 billion was set aside this year for specialty crops, such as the eggplants, strawberries, or salad greens that are grown by exactly these small, mostly organic farmers. That's a big bump-up from the \$100 million that was earmarked for such things in the previous legislation.

Small farmers will be able to get up to 75% of their organic certification costs reimbursed, and some of them can obtain crop insurance. There's money for research into organic foods, and to promote farmers' markets. Senator Tom Harkin (D-Iowa) said the bill "invests in the health and nutrition of American children... by expanding their access to farmer's markets and organic produce."

The local food movement has not been lost on the giants of food retailing. Large supermarket chains like Wal-Mart (WMT), Kroger (KR), and even Whole Foods (WFMI) depend on their scale to compete. Their systems of buying, delivering, and stocking are not easily adapted to the challenges of providing local food, which by its nature involves many diverse groups of farmers. People have gotten used to eating tomatoes and strawberries at all times of the year, and many parts of the country are too cold to produce them in the winter. Thus, even Whole Foods, which bills itself as the world's leading retailer of natural and organic foods, has committed to buying from barely four local farmers at each of its stores.

Wal-Mart, which in the last couple of years ran a "Salute to America's Farmers" program, says that buying from local farmers not only satisfies customers' desires, but also fits the company's commitment to sustainability and cutting down on food transportation. However, the company admits that local farms can never take over the produce aisle completely. "It gets complicated since not every state grows apples and lettuce, and even when they do, it doesn't grow at all times of the year," said Bruce Peterson, formerly Wal-Mart's senior vice-president of perishables, in an interview 17 months ago. He has since left the company.

BROAD AGENDA

Nonetheless, all the giants are devoting a small but growing share of shelf space to locally bought produce. Some are even inviting the farmers into the store to promote their goods. "Obviously supermarkets don't want to lose that business," says Michael Pollan, author of the best seller *The Omnivore's Dilemma*. Neither Wal-Mart nor Whole Foods will quantify how much business they get from locally grown food.

The very definition of "local" food presents a ceiling of sorts for successful small farmers. If they start shipping more than 250 miles or so, they cease to be local and their appeal vanishes. The optimal solution is to locate near densely populated areas, but that's where acreage is scarce. "Land prices are very expensive around metro and urban areas, which is a barrier to entry," says Pollan. He thinks the solution will be for farmers to look for ways to farm [more varieties of food](#) (BusinessWeek.com, 5/21/08).

The local food movement has many of the same hallmarks of the organic foods movement, which sprang up in the 1970s to place a premium on foods grown without pesticides and synthetic fertilizers. Indeed, almost all of today's small farmers use organic techniques. But many consumers believe that organic foods, though

seemingly healthy, may still damage the environment. For instance, organic fruits that are grown in Chile and Argentina and then shipped halfway around the world require fossil fuels and carbon emissions to power tankers and trucks thousands of miles. Instead of just focusing on pesticides and chemicals, consumers who have been educated by movies like *An Inconvenient Truth* now pore over "food miles" and "carbon footprints." The message seems to be: If you buy organic, you care about your own body; if you buy local, you care about your body and the environment.

As more and more consumers take those values to the store with them, the impact is being felt far from the predictable centers of "green" consciousness. In Bloomington, Ind., supermarket chains such as Kroger still dominate, but an upstart called Bloomingfoods Market that specializes in local fare lately has been stealing market share. Today the cooperative has 7,000 shopping members, up from 2,000 five years ago. It works with 180 farmers to offer everything from strawberries and persimmons to squash and shitake mushrooms. "We're seeing a real renaissance," says Ellen Michel, marketing manager for Bloomingfoods.

As the local food movement grows more mainstream, it's showing up in unexpected places. Corporations such as Best Buy (BB) in Minneapolis, DreamWorks (DWA) in Los Angeles, and Nordstrom (JWN) in Seattle are providing local options in their cafeterias. "We try to purchase as much as we can from farmers in a 150-mile radius," says Fedele Bauccio, CEO of *Bon Appetit Management*, which runs more than 400 cafeterias for companies like Oracle (ORCL) and Target (TGT).

BLOSSOMING INTEREST

As many as 1,200 school districts around the country, from Alabama to Iowa, have linked up with local farms to serve fresh vegetables and fruit to children. Colleges such as Brown, Cornell, the University of Montana, and the University of California at Berkeley are buying from their state's own producers. Last year, Iowa's Woodbury County mandated that its food-service supplier buy from local farmers for places where it serves food, such as its prison and detention center.

And in hundreds of towns, people are signing up for CSAs, or community-supported agriculture organizations, where they pay a local farmer for a weekly supply of produce during the harvest season. In 2000, there were around 400 farms that had CSA programs; today there are more than 1,800 nationwide. Families typically pay a farm \$150 to \$650 each year in return for a weekly basket of vegetables, fruit, eggs, meat, or baked goods. In New York City, where 11,000 residents participate with 50 farms, the demand is so high that there's a wait list. And in some inner cities, like the Bronx, a borough of New York City, organizations are training community gardeners to grow vegetables like collard greens, herbs, and beets for their community, changing food habits in the process.

"We are even teaching people how to prepare seasonal produce," says Jacquie Berger, executive director of Just Food, a nonprofit that helps fresh-food growers sell to residents in the Bronx.

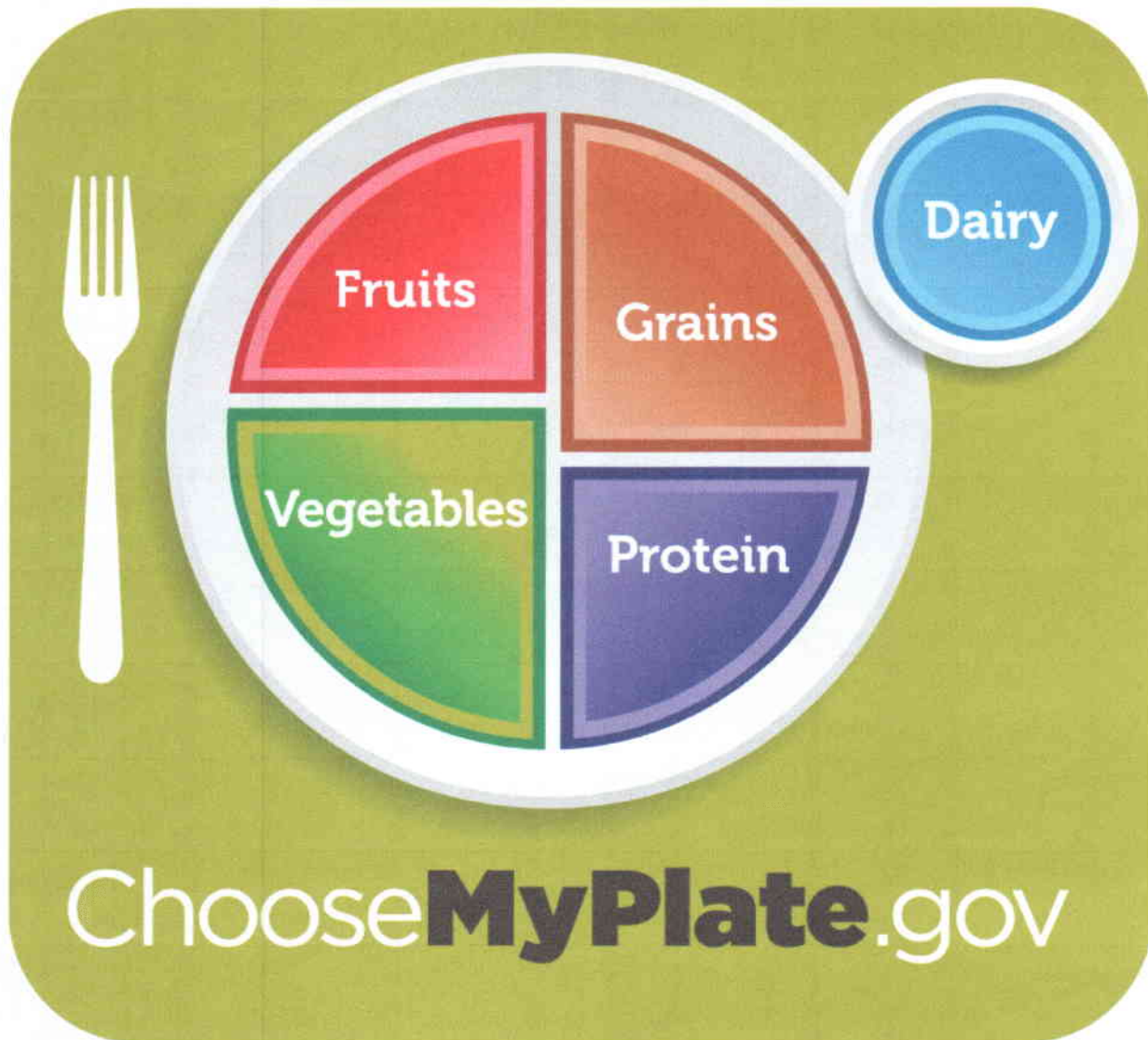
That may be less of an issue in more pastoral settings such as Abingdon. But residents of the Virginia town look forward to Saturday at the farmers' market, mingling, passing out petitions, and letting the kids snack on berries while their parents shop for the week's groceries in a fresh setting. "There's a groundswell of interest not just for vegetables and fruits, but also eggs, poultry, and meat—people want it close to home, as fresh as possible, and produced sustainably," says farmer Flaccavento.

Gogoi is a contributing writer for BusinessWeek.com.



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