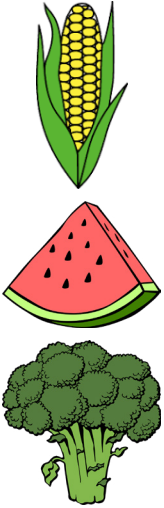


Reducing Pesticide Levels in Children



As consumers, hearing or reading about pesticides and organic versus conventional food is becoming more common place. Understanding the differences between organic and conventional food, as well as health implications associated with chemical and/or synthetic pesticide exposure, is perhaps less understood by the average person. As childcare providers, the responsibility for providing healthy food to children lies with you. Knowing which foods are healthy choices for children can be a difficult task. However, when armed with knowledge, making healthful choices on behalf of your children should be more manageable and less daunting.

The following pages will discuss the differences between organic and conventionally grown food, health benefits associated with eating organic food, and health risks associated with eating conventional food containing low to high levels of chemical or synthetic pesticide residues. In addition, the following will be provided: tips for buying low-residue foods on a budget, questions to ask produce farmers, and tips for reading food labels.

Defining Organic and Conventionally Grown Food

Farms using conventional agriculture methods commonly use chemical fertilizers, synthetic pesticides, fungicides, and herbicides. In addition, conventionally grown foods may be from genetically modified organisms (GMOs). Ionizing radiation (food irradiation) is also widely utilized during conventional food processing in an effort to reduce spoilage and eliminate food-borne pathogens.

In contrast, organic labeling denotes the food product was produced through approved systems. According to the USDA, these systems strive to blend “cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity” (1). Most synthetic and chemical materials, such as pesticides and fertilizers, as well as antibiotics may not be used in organic food production. Also, organic farms and processors are not permitted to use genetically modified seeds or ingredients, ionizing radiation is not used, and annual onsite inspections are required to verify compliance with USDA organic certification requirements (1).

Concerns with Conventional Foods

A key concern with conventionally grown food is the potentially harmful organophosphate (OP) pesticide residues they contain. Health risks associated with dietary and/or environmental OP pesticide exposure include preeclampsia (PE), reduced birth weight, reduced gestation period, reduced IQ in children, and increased risk of developing leukemia in children less than 2 years old (2, 3, 4). According to a large and inclusive report by Centers for Disease Control and Prevention (CDC), OP pesticides (also called OP insecticides) are widely used on conventional food crops in the United States, accounting for an estimated “73 million pounds of organophosphorus insecticides (70% of all insecticides)” used in America (5). Most people come into contact with OP pesticides through the food they eat. Children, babies and fetuses are more sensitive and at higher risk of pesticide toxicity and neurotoxicant susceptibility compared to adults. Children weigh much less than adults making their pesticide toxicity tolerance very low in comparison. Enzymes used to detoxify activated forms of specific OP pesticides are also lower in children. Therefore, children, babies, women of childbearing age, and pregnant women should consume foods low in OP pesticides whenever possible to reduce associated health risks (2).



Organic vs. Conventional: Is One More Nutritious?



Consuming adequate amounts of fruits and vegetables high in vitamins, minerals, antioxidants, and phytochemicals is widely known to provide health benefits and reduce and/or reverse disease. When looking at nutritional quality of organic versus conventionally grown crops, research findings indicate organic crops are superior with regards to vitamins, minerals, antioxidants, and phytochemicals when grown under optimal conditions. Antioxidants and phytochemicals have been estimated to be about 19% higher in organic crops/crop-based foods compared to conventionally grown crops. By eating organic versus conventionally grown food, a person could increase their antioxidant and phytochemical consumption by 20-60% without adding extra dietary calories (6).

.....
 : **** Please Remember! **** :
 : Eating fruits and vegetables, regardless of how they are grown, :
 : is very important to the health of your children. :
 :

Environmental Working Group's 2015 Clean Fifteen & Dirty Dozen Plus: Shopper's Guide to Pesticides in Produce



Clean Fifteen

Dirty Dozen (Plus)



If you are unable to purchase organic produce or find yourself in a situation where organic produce is not available, choose food listed on the Clean 15 list and avoid food listed on the Dirty Dozen Plus list whenever possible.

Visit www.ewg.org for more information.

Asparagus	Mangoes	Apples	Peaches
Avocados	Onions	Celery	Potatoes
Cabbage	Papayas	Cherry Tomatoes	Snap Peas
Cantaloupe	Pineapples	Cucumbers	Spinach
Cauliflower	Sweet Corn	Grapes	Strawberries
Eggplant	Sweet Peas (frozen)	Nectarines	Sweet Bell Peppers
Grapefruit	Sweet Potatoes	Hot Peppers	Kale
Kiwi		Collard Greens	

Buying Low-Pesticide Residue Foods Without Blowing Your Budget

Being on a budget requires tight control of how much money is spent on food. Purchasing foods containing low amounts of pesticide residues is possible with a little work. Begin by comparing prices between organic and conventionally grown food and food products. If a non-organic option is slightly less expensive than a comparable organic option, choose the organic option. Buy fresh produce in-season as they'll be less expensive, look for sales, shop at farmers' markets, and buy in bulk whenever possible. Freeze seasonal produce for year-long access to organic foods. If you cannot afford or find organic or naturally grown produce and/or products in a store or farmers' market near you, consult EWG's "Dirty Dozen, Clean Fifteen" list. Opt for conventional produce listed on the "Clean Fifteen" list which contain the least amount of pesticide residues when organic foods aren't an option (7).



General Questions to Ask a Produce Farmer

ASKING QUESTIONS is the best way to make sure that you're buying healthy food with little to no pesticide residues while supporting farmers who practice organic and/or natural farming methods. The following are examples of questions to ask your local farmers before deciding who to buy food from:



What pest control methods do you use on your farm?

Farming practices that avoid using chemical/synthetic pesticides include growing pest-resistant crop varieties, using predatory insects to kill plant-eating pests (e.g., lady bugs and praying mantis), using mechanical pest traps, and eliminating pest nesting areas by plowing under harvested crops.

What types of fertilizers do you use?

Many farmers use synthetic fertilizers to increase growth and yield in produce crops but their use is unnecessary and can be harmful to both humans and the environment. Fertilizing options that are free of OP pesticides include using organic compost and/or manure from pasture-raised farms.

Does this produce come from your farm?

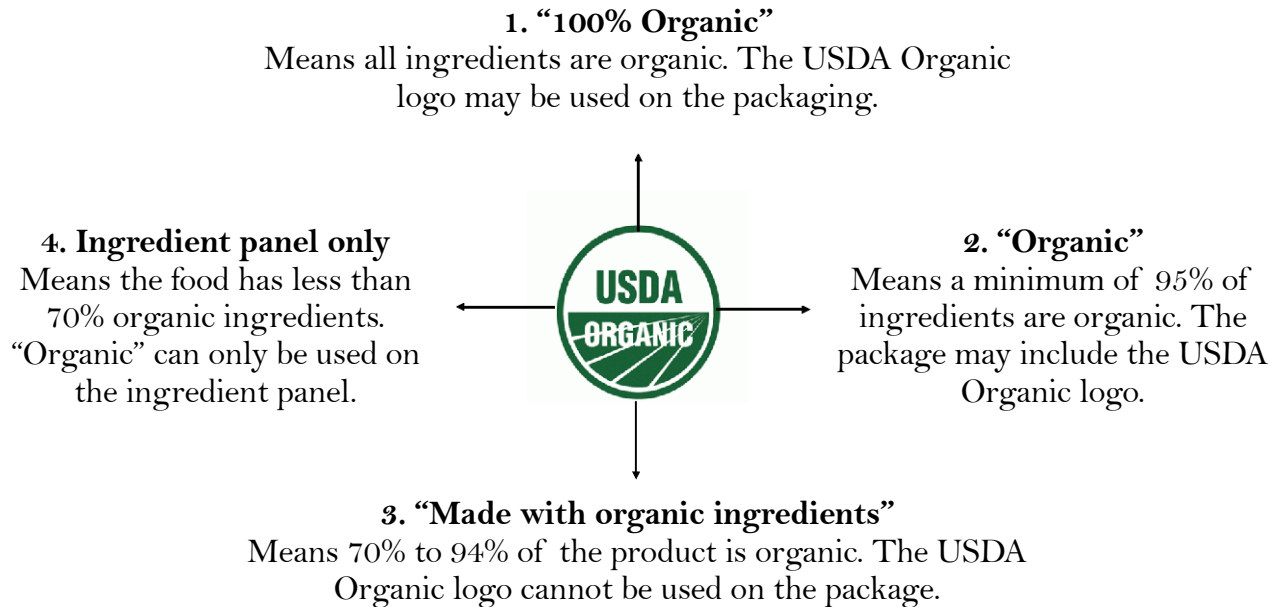
Farmers will often outsource for specific produce items, such as fruit from orchards, to provide more variety of produce at their farm stands for customers. Selling produce grown by multiple farmers is okay as long as the farmer you are buying from is outsourcing from other farmers who do not use chemical and/or synthetic pesticides and fertilizers. Ask your farmer about who they outsource from and what farming methods are used by these outsourced farmers.

Is your farm certified organic or naturally grown?

If a farm's products are certified with a third party label, such as USDA Organic or Certified Naturally Grown, some of the work is done for you. Some farmers choose not to become certified organic for financial or political reasons. Others are working towards becoming certified, but this process can take 7 years or more. Not being certified organic doesn't mean that they're not using organic or natural farming methods, or that you shouldn't support them. However, it does mean that the responsibility lies with you to find out how they farm. Most farmers whose produce is not certified organic will be willing to explain why and answer any questions you have.

Reading Food Package Labels

Food packaging usually features information about the food and its ingredients. Understanding what the labels and specific terms mean is beneficial and will help in determining if the food is what you are looking for. “There are four distinct labeling categories for certified organic food products: 100% Organic, Organic, Made with organic _____, and specific organic ingredients” (8). The following is what you need to know about what the USDA Organic label and others mean:



Resources:

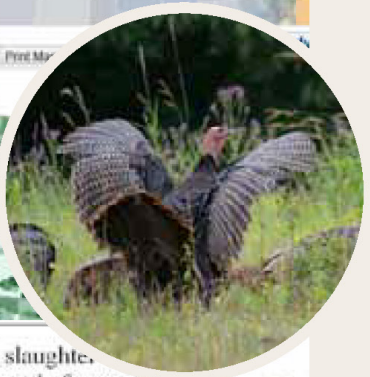
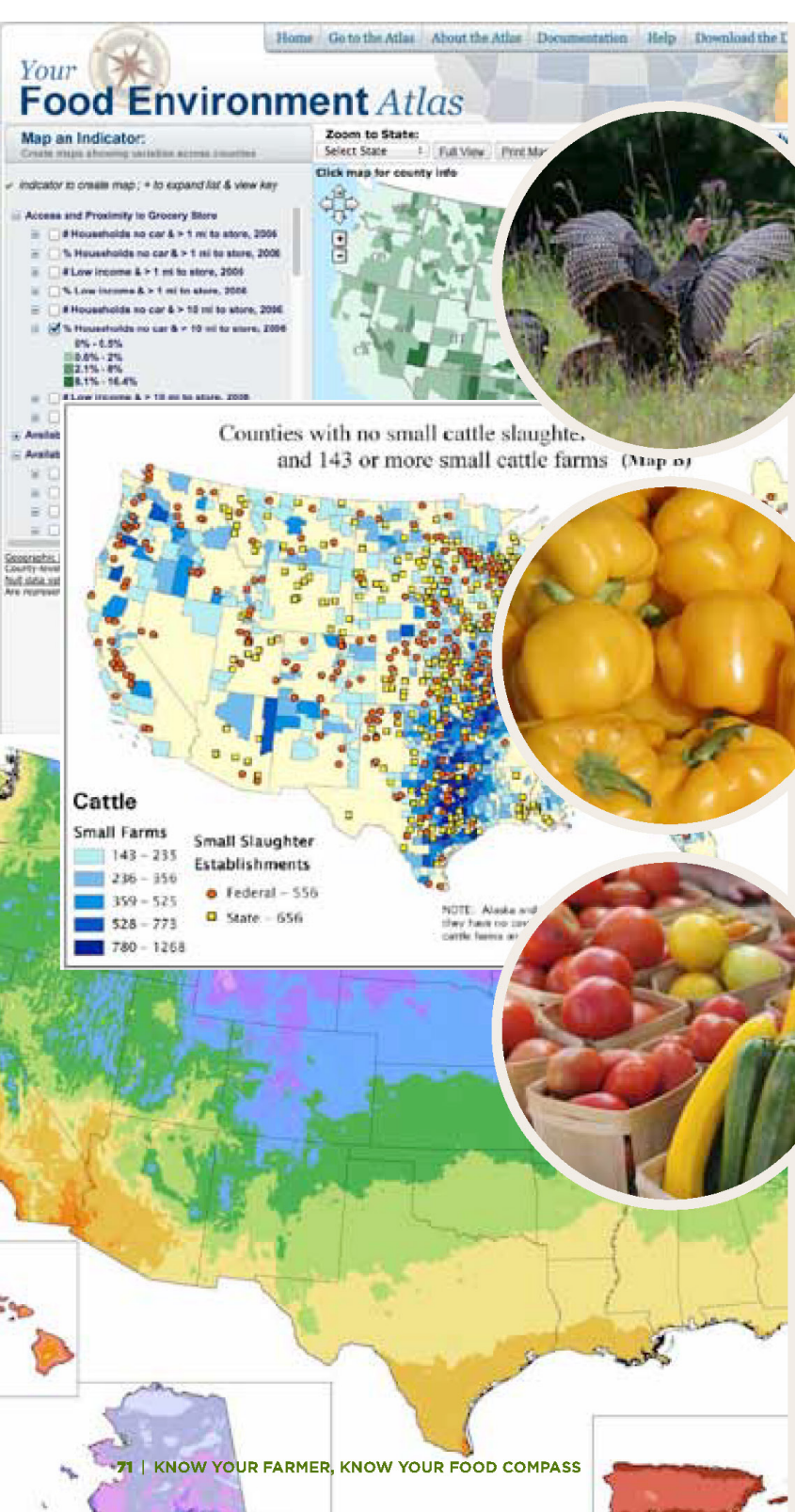
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Individuals who are deaf, hard of hearing or have speech disabilities may contact USDA through the Federal Relay Service at (800) 877-8339; or (800) 845-6136 (Spanish).

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LOCAL FOOD KNOWLEDGE

In 1839, Congress established an Agricultural Division within the U.S. Patent Office for “the collection of agricultural statistics and other purposes.” In 1862, under President Lincoln, this office became the Department of Agriculture. Since that time, data-gathering and research activities have remained central to the Department’s goal of helping Americans better understand agriculture. From the National Agricultural Statistics Service’s [Census of Agriculture](#) to research activities carried out or supported by many of USDA’s 17 agencies, USDA deepens its own understanding of the agricultural sector, shares that knowledge broadly, and encourages the public to undertake its own research and learn more about agriculture—including local food systems.

The sheer number of people and organizations involved in local food work highlights the importance of USDA efforts to conduct research, gather data, and better understand how markets for local foods impact our lives and economy. When policymakers and practitioners on the ground make business and policy decisions, they need this kind of research and data to answer pressing questions: Are local food operations profitable? What are the barriers to their success and how might these



FAST FACT

- AMS’s Farmers’ Market Directory, which shows the locations of farmers’ markets throughout the U.S. and which accept nutrition assistance benefits, received 2 million page views in 2011 alone—triple its 2010 traffic. Developers have created apps and other tools using the data.

networks become more efficient? Who shops at farmers’ markets? How do farm to school programs affect student diets or producers’ bottom lines? How many jobs could we generate through local food investments?

Individuals may also be interested in using research and data to learn more about their local food system and gain a better understanding of where their food comes from. What’s being grown in my region? How many co-ops, grocery stores, or farmers’ markets are marketing local food, and which take nutrition benefits like SNAP (food stamps)? Is USDA funding local





North Carolina's Center for Environmental Farming Systems, supported by USDA's SARE program, researches locally-adapted plant varieties and growing conditions.

food projects in my community? (The last question is now more easily answered with help from the [KYF Map](#).)

As with many evolving fields, research on local and regional food still leaves many questions unanswered. There is a lack of peer-reviewed literature and national datasets; local case studies and surveys are inconsistent in their format, making comparison difficult; and there is no standardized way to estimate economic impacts of local and regional markets. For that reason, USDA staff engaged in research and data-gathering came together through the Know Your Farmer, Know Your Food initiative to compile and publicize existing research and data, fill gaps and plan for future work. KYF also highlights resources to help people use research and data tools to learn more about their farmers and their food.

ON THE GROUND: KYF AND LOCAL FOOD KNOWLEDGE

Tracking existing research and identifying holes.

As part of the KYF initiative, several USDA agencies came together to share, compile, analyze and summarize data on the impacts of local and regional food systems. A 2009 USDA [conference](#) brought together government, academic and nonprofit researchers to assess the state of knowledge on these markets; as a follow-up, USDA's Economic Research Service (ERS) published a [report](#) in early 2010 that surveyed the landscape of local and regional food systems—how they are defined, who participates in them, and how they are impacting economic development and health. An [article](#) published in late 2010 summarizes ERS-sponsored research on the different routes food takes to get from local farms to consumers' tables. And in 2011, ERS published a [study](#) that took a more comprehensive look at farmers

participating in direct marketing or selling to local retailers and other “intermediated” markets.

Staff from USDA's National Agricultural Library (NAL) and Agricultural Marketing Service (AMS) joined forces to compile annotated bibliographies of existing peer-reviewed documents, reports and guides related to two areas of focus: [Farm to school programs](#) and [food hubs](#).

Strengthening USDA's understanding of local foods, supporting yours.

Understanding patterns of data and information can tell USDA a lot about our local food systems. Digital displays of information are some of the most effective ways to show these patterns to the public. The Know Your Farmer, Know Your Food initiative was the impetus for the creation of several new digital tools, most recently the [KYF Map](#), which maps local food projects and programs supported by USDA across the country.

The map builds on or complements other local food directories developed through KYF. For example, AMS's [Farmers' Market Directory](#) provides the locations of farmers' markets throughout the U.S. and notes whether nutrition assistance program benefits are accepted. The Directory received 2 million page views in 2011 alone, triple its 2010 traffic. The raw data for this map has been [fodder for web and applications designers](#), who have used it to create everything from a local foods locator to a [healthy eating badge](#) co-branded by CNN and Foursquare. The AMS [Food Hubs Directory](#) helps producers find businesses that aggregate and distribute food from smaller farms to higher-volume markets. AMS and ERS also developed a [map and article](#) on farmers' market density and “competition zones” to help market managers understand their customer base and potential competition from other markets. USDA's Food



Safety Inspection Service compiled maps of slaughter availability to small livestock and poultry producers; learn more in the [Local Meat and Poultry](#) section of the KYF Compass.

How do all of these variables fit together to shape our local food environment? To help answer that question, the Economic Research Service pulled together over 100 variables to design the [Food Environment Atlas](#), which includes the locations of farmers' markets and farm to school programs, the number of producers engaged in direct-to-consumer sales, nutrition program participation, and area demographic characteristics. This tool is used by private and public sector organizations to document the availability of local foods and plan for programs that improve community health.

These tools, combined with the new [KYF Map](#), will help users visualize how USDA is supporting efforts to build stronger local food economies and how these efforts might impact the variables that shape our food environments. Although the maps by no means comprehensive, it begins to paint a picture of the breadth and depth of USDA support for this work and can be organized by theme, type of recipient, or funding agency.

KYF encourages people to get to know their farmers and their food by utilizing these tools and others to transform their own pantry, neighborhood, or community. Individuals can also look to the [Census of Agriculture](#) to find out more about how many farmers are producing food in their region, the type of crops grown, and other information. (Learn more about how to use the Census for local food research [here](#).) And the newly-launched [Plant Hardiness Zone map](#) can help producers, gardeners and local food consumers see what kinds of foods can be grown in their region.



The graphic features a stylized landscape with a sun, green hills, a farm with a barn and chickens, and a city skyline. Below the landscape, the title "Making Good Food Work" is written in a bold, dark font, followed by the dates "April 19-21, 2011" and the location "Detroit, Michigan". To the right of the title is a silhouette of two people talking. The entire graphic is set against a light blue and green background.

Making Good Food Work

April 19-21, 2011 • Detroit, Michigan

In 2010, a new "sustainable food systems" grant focus was started under the Agriculture and Food Research Initiative of USDA's National Institute of Food and Agriculture. Among other efforts, the program supported the "Making Good Food Work" conference in Detroit, which brought together teams to develop local food business strategies, propose solutions to common challenges, and learn from each other's experience.

Supporting research in the field and sharing promising practices. USDA grants also help speed innovative research by academics and practitioners in the field, while the Department's education and outreach programs multiply the benefits of this work. **Several funding opportunities**, including a number of programs administered by USDA's National Institute of Food and Agriculture, accept grant proposals to develop, test and educate others about innovative research on local foods. USDA also develops and compiles case studies

and analysis culled from on-the-ground experience; for example, the Agricultural Marketing Service's National Direct Distribution Study analyzes the distribution and marketing operations of eight regional food distributors selling to institutional customers.

Plotting next steps. After assessing the landscape of research and data available on local food systems, USDA staff and partners have identified gaps and developed strategies to gather needed information. With support from the Agricultural Marketing Service,





Fidel and Hilda Castillo show Agriculture Secretary Tom Vilsack (right) their new farming methods during the Secretary's visit to the Castillo Farm near Plant City, FL, on May 14, 2010.

USDA's Food and Nutrition Service is conducting a [pilot survey](#) on barriers to the redemption of SNAP (food stamp) benefits at farmers' markets. FNS and ERS are collaborating on a farm to school census that will describe the number of schools engaged in these programs and some of the outcomes. The National Agricultural Statistics Service continues to improve on the quality of the information it gathers about farms selling local foods through the Agricultural Resource Management Survey (ARMS) and the Census of Agriculture; the agency added questions on farm to school sales to the upcoming ARMS and a question on local food sales to retailers and restaurants to the 2012 Census of Agriculture.

The Economic Research Service is constructing a "food localization index," which uses county-level public data to indicate the degree of involvement of farmers and consumers in local food systems and the level of investment in these systems by public and private entities.

These kinds of research and data-gathering activities are key to improving our knowledge and understanding of where our food comes from and the environments that shape local food access and economic growth. To see projects supported by USDA related to research on local food systems, visit the [KYF Map](#).





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