



**SUSTAINABLE RDN**  
**[www.sustainableldn.com](http://www.sustainableldn.com)**  
*Sustainable eating for a healthy planet*

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# 2015 Texas Academy of Nutrition and Dietetics

## Food & Nutrition Conference & Exhibition

April 9<sup>th</sup> 2015  
Houston TX



The Food on Our Plate:

*Evidence Linking Healthy Food  
to a Healthy Planet*

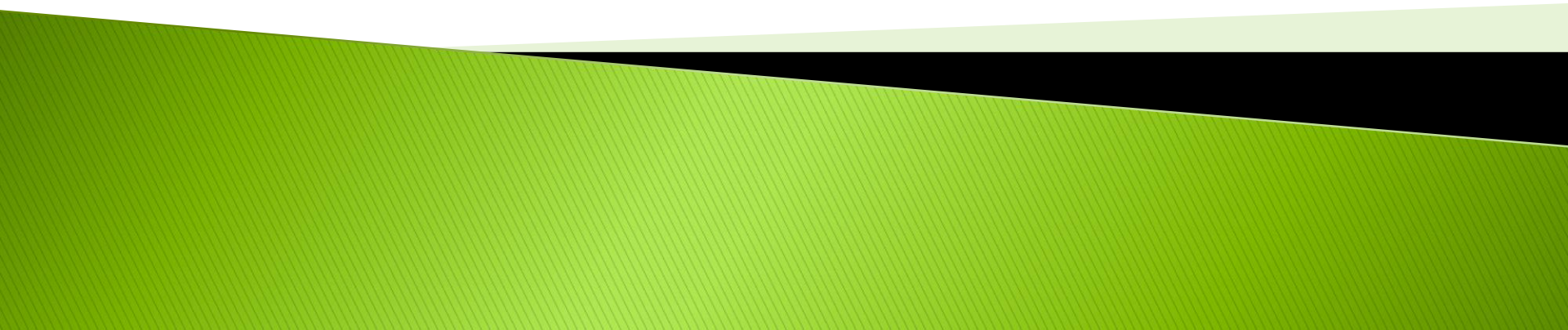
## Financial Disclosure:

Speaking Honorarium – Organic Valley (2015)

# *The Food on Our Plate: Evidence Linking Healthy Food to a Healthy Planet*

## Learning Objectives:

Registered dietitians will:

- 1) explain three ways that food choices are linked to planetary health;
  - 2) describe the role of strategic planning and negotiation skills in creating more sustainable, resilient, and healthy food systems;
  - 3) develop an action plan to reduce impact on the natural environment within their respective workplaces or communities.
- 

# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet



*Why Should We Care?*



(i.e., The ways food and food choices are linked to planetary health.)

- Climate Change
- Endocrine Disrupting Chemicals (EDCs)
- Waste – Food and Food Packaging

# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet



*Why Should We Care?*



(i.e., The ways food and food choices are linked to planetary health.)

- Climate Change

## A Hot Time in Texas?

### 'NASA Scientist Links Drought to a Longer-term Climate Change'

In 2011, heat spells, drought, and associated wildfires generated a \$7.62 billion in crop and livestock losses in Texas alone.



The period between Nov. 1, 2010, and Oct. 31, 2011, was the driest one-year period in Texas history, and June through August was the hottest three-month period ever reported by any U.S. state, according to climate experts. Credit: USDA

Source: Nabhan GP. "Getting a Grip on Climate Change" (Chapter 1). In: *Growing Food in a Hotter, Drier Land. Lessons from Desert Farmers on Adapting to Climate Uncertainty*. Chelsea Green Publishing: White River Junction Vermont; 2013;pp:1 – 32.



# NOAA Connects Texas Drought to Climate Change (2012)

Video available at:

[Weather Channel and Extreme Drought in Texas – Bing Videos](#)

Reference: Peterson TC, Stott, PA, Herring S. Explaining extreme events of 2011 from a climate perspective. *Bulletin of the American Meteorological Society*. 2012;1041–1067.

DOI :10.1175/BAMS -D-12-00021.1

# Climate Change

**Dr. Katharine Hayhoe** ...is an atmospheric scientist who studies climate change -- one of the most pressing issues facing the planet...



“The choices we make today and over the next decade will have a radical impact on the path we travel in the future.” <http://katharinehayhoe.com>

For more info., see:

[http://www.depts.ttu.edu/politicalscience/faculty/Hayhoe\\_Katharine.php](http://www.depts.ttu.edu/politicalscience/faculty/Hayhoe_Katharine.php)

# Climate Change

## *Years of Living Dangerously : Pray for Rain (2014)*

<http://yearsoflivingdangerously.com/story/pray-for-rain>

‘In 2013, Cargill, the largest privately-held company in the U.S., closed down its huge meat-packing plant in Plainview, TX. The company said that because of the drought there just weren’t enough cattle to make it worthwhile to keep the plant open.’

In *Pray for Rain*, Don Cheadle visits Plainview (TX) and finds that most people blame the drought on the will of God or say it’s part of a natural cycle. Dr. Katharine Hayhoe -- a renowned climate scientist at Texas Tech University -- has a very different explanation.

**Full Episode I: Dry Season (2014) – watch free online:**

<http://yearsoflivingdangerously.com/watch-years/>

# Climate Change

## Science Behind The Story

In Texas, a three-year drought devastated the cattle herd causing the total cattle herd to be reduced by 2 million cattle.

### Sources:

[United States Department of Agriculture](#)  
[United States Drought Monitor](#)

### Available at:

<http://yearsoflivingdangerously.com/topic/drought/>

# “Farming Now Worse for Climate than Deforestation” (Climate Central, February 3<sup>rd</sup> 2015):



AP Photo – Cattle are kept in pens at a feedlot southwest of Omaha, Nebraska

© Nati Harnik/AP



Reference: Tubiello, FN, Salvatore, M, Ferrara, AF, et al. The contribution of agriculture, forestry, and other land use activities to global warming, 1990–2012. *Global Change Biology* (2015), doi: 10.1111/gcb.12865

# Tanzania Embraces New System of Growing Rice

## System of Rice Intensification – SRI



<http://www.dw.de/tanzania-embraces-new-system-of-growing-rice/a-17308107>

**Note:** this methodology has been applied to wheat, finger millet, teff, and other crops (including beans). For more information, see:

<http://sri.ciifad.cornell.edu/aboutsri/othercrops/index.html>

### Additional Reference:

*System of Crop Intensification: Agro-ecological Innovations to Improve Agriculture Production, Food Security, and Resilience to Climate Change* (Cornell University, 2014)

[http://sri.ciifad.cornell.edu/aboutsri/othercrops/SCImonograph\\_SRIRice2014.pdf](http://sri.ciifad.cornell.edu/aboutsri/othercrops/SCImonograph_SRIRice2014.pdf)

# Evidence Linking Healthy Food to a Healthy Planet Climate Change:

- ‘A study published in *Nature* (2014) suggests that eating less meat, less refined fat, & less sugar will reduce the climate change impacts of food production.’
- “Alternative diets (compared to conventional omnivorous diets) offer substantial health benefits, [and] if widely adopted, reduce global agricultural greenhouse emissions; reduce land clearing and resultant species extinction; and help prevent... diet-related chronic non-communicable diseases...”

Tilman D, Clark M. Global diets link environmental sustainability and human health. *Nature*. 2014;515:518–522. Grossman, E. Mostly plants: new science says a healthier diet is best for the climate. *Civil Eats*. November 12<sup>th</sup> 2014. Available at:

<http://civileats.com/2014/11/12/eat-your-veg-new-science-says-a-healthier-diet-is-best-for-the-climate/>

# Evidence Linking Healthy Food to a Healthy Planet Climate Change:

- ‘A vegetarian diet – corrected for other lifestyle factors – reduced the incidence of Type 2 diabetes by 41 percent, followed by a vegetarian diet that includes seafood (i.e., “pescetarian diet”), (25 percent), & a Mediterranean diet rich in fruits and vegetables, seafood, and includes moderate meat consumption (16 percent).’

Tilman D, Clark M. Global diets link environmental sustainability and human health. *Nature*. 2014;515:518–522. Grossman, E. Mostly plants: new science says a healthier diet is best for the climate. *Civil Eats*. November 12<sup>th</sup> 2014. Available at:

<http://civileats.com/2014/11/12/eat-your-veg-new-science-says-a-healthier-diet-is-best-for-the-climate/>



# Evidence Linking Healthy Food to a Healthy Planet

## Climate Change (cont'd):

- ‘The solution to the “diet–environment–health trilemma” will require choosing menus high in plant–based, whole foods like those that fit into a Mediterranean, “pescetarian” or vegetarian diet.’
- Dietary choices that individuals make are influenced by culture, nutritional knowledge, price, availability, taste, and convenience.

Tilman D, Clark M. Global diets link environmental sustainability and human health. *Nature*. 2014;515:518–522. Grossman, E. Mostly plants: new science says a healthier diet is best for the climate. *Civil Eats*. November 12<sup>th</sup> 2014. Available at:

<http://civileats.com/2014/11/12/eat-your-veg-new-science-says-a-healthier-diet-is-best-for-the-climate/>

# Evidence Linking Healthy Food to a Healthy Planet Climate Change (cont'd):

## Vegetarian DPG Resource (2015): Plant-Based Diets in Climate Change Mitigation and Resource Conservation

“This RD Resource offers evidence-based research that documents the beneficial role of plant-based diets in reducing greenhouse gas emissions, resource consumption, and environmental degradation. Plus the resource shares strategies for promoting a healthy planet and provides a long list of resources.”

Available for download at:

[http://vndpg.org/wp-content/uploads/2015/02/Climate-Change-RD.pdf?utm\\_source=VN+DPG+Members&utm\\_campaign=9992a7d024-&utm\\_medium=email&utm\\_term=0\\_9209d8a7e7-9992a7d024-415064861](http://vndpg.org/wp-content/uploads/2015/02/Climate-Change-RD.pdf?utm_source=VN+DPG+Members&utm_campaign=9992a7d024-&utm_medium=email&utm_term=0_9209d8a7e7-9992a7d024-415064861)

# Doctor Sends Patients to the ‘Farmacy’: ‘Fruits and Veggies Are the Prescription to Good Health’



**“I have found that a diet very high in plant-based foods [including fruits and vegetables]...can help turn off our cravings for processed foods.” – Dr. Garth Davis – board certified general surgeon and bariatric surgeon**

Source: Davis, G. Memorial Hermann Memorial City (Houston, TX). Doctor Sends Patients to the ‘Farmacy.’ *Advances in Health*. Summer 2014, p. 2.

# Evidence Linking Healthy Food to a Healthy Planet Climate Change (cont'd):

## Victory Gardens

### *Houston Mayor Annise Parker Launches City Hall Victory Garden*

In 2010, Houston Mayor Annise Parker launched the City Hall Victory Garden at Tranquility Hall; it is the second phase of the Mayor's local food initiative that encourages vegetable & rain gardens to be built throughout Houston.

Drought Relief: Victory Gardens Are Our Future (2014)

<http://www.nbcnews.com/business/economy/drought-relief-are-victory-gardens-our-future-n113151>

Press Release: Mayor Annise Parker Launches City Hall Victory Garden (2010)

<http://www.houstontx.gov/mayor/press/20100930b.html>

# Evidence Linking Healthy Food to a Healthy Planet Climate Change (cont'd):

## Victory Gardens

### *Houston Mayor Annise Parker Launches City Hall Victory Garden*

“The City Hall Victory Garden is another opportunity to bring citizens into the city-wide sustainability strategy – to make Houston a greener and healthier place to live and work... The City of Houston is leading by example, demonstrating how easy and affordable it is to build a container garden.”

Drought Relief: Victory Gardens Are Our Future (2014)

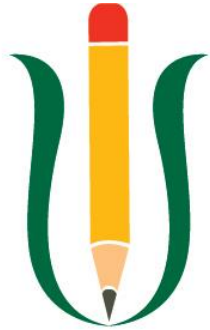
<http://www.nbcnews.com/business/economy/drought-relief-are-victory-gardens-our-future-n113151>

Press Release: Mayor Annise Parker Launches City Hall Victory Garden (2010)

<http://www.houstontx.gov/mayor/press/20100930b.html>

# GARDENING RESOURCES – Curriculum & Resources

*Urban Harvest* Garden Educators use a wide variety of curriculum resources which can also be added to a school's or classroom's reference library.



Urban Harvest  
EDUCATION



More information is available at:

<http://urbanharvest.org/curriculum-resources;jsessionid=FC3DDF18743FEC8849F80C02B1EEF0FE>

# LEARNING IN THE OUTDOOR CLASSROOM

Source: Urban Harvest ([www.urbanharvest.org](http://www.urbanharvest.org))



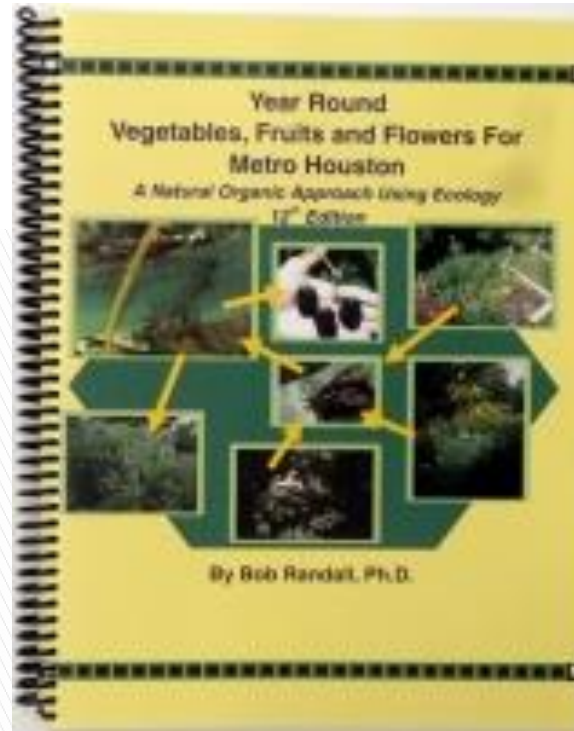
## Growing Healthy School Gardens at Ryan Middle School

Urban Harvest partnered with [Baylor College of Medicine Academy at Ryan](#) (BCMAR) Middle School on February 28 to build the "Harvest Lab" school community garden.

A team of teachers, parents and other volunteers came out to move bricks and soil to build four raised vegetable beds and a pollinator garden. **The Environmental Club of University of Houston Downtown** and **M.D Anderson students** were also a great help in support of growing healthy schools.

Their [school partner](#), the "**Harvest Lab**" garden provides an opportunity to integrate nutrition and environmental health into all courses and is integral to the health theme at BCMAR. This will help promote healthy, tasty culinary choices for the BCMAR community as students and families will enjoy eating and learning from their garden harvests.

# Gardening Book



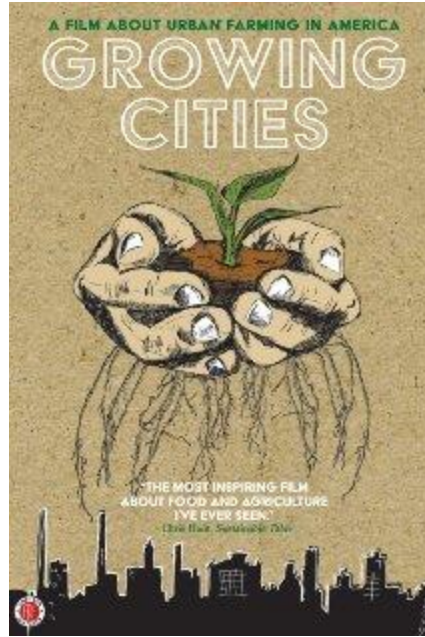
## *Year Round Vegetables, Fruits and Flowers for Metro Houston (A Natural Organic Approach Using Ecology)* by: Dr. Bob Randall

The book is available for purchase at: <http://www.greenlifeaquaponics.com/year-round-vegetables-fruits-and-flowers-for-metro-houston/>

For more information on Dr. Bob Randall and his work in Houston, TX, see: <http://www.cleanhouston.org/heros/randall.htm>



# Growing Cities (Documentary)



A documentary film (2013) that examines the role of urban farming in America and asks how much power it has to revitalize our cities and change the way we eat.

Source: <http://www.growingcitiesmovie.com/the-film/>

# Growing Cities (Documentary)

## HOST A SCREENING!

<http://www.growingcitiesmovie.com/screenings/>

### Tools –

- **Community Screening Information Sheet**
  - **Promotional Poster**
  - **Screening Toolkit**

These tools are available (free of charge) at:

<http://www.growingcitiesmovie.com/screenings/#Tools>

### Additional Resources\*\*

<http://www.growingcitiesmovie.com/learn/>

# Farm To School Programs

*Toolkit – Growing Your Farm to School Program*

<http://www.fns.usda.gov/farmentoschool/census#/toolkit>

- 1) Building Your Farm to School Team
- 2) Establishing Vision and Goals
- 3) Defining Local and Finding Local Foods
- 4) Buying Local Foods
- 5) Menu Planning
- 6) Food Safety
- 7) Promoting Your Program
- 8) School Gardening
- 9) Education & Curriculum Education
- 10) Evaluating Your Efforts

## ***Using Regionally Grown Grains and Pulses in School Meals*** **(2015) – Institute for Agriculture and Trade Policy**

- Using regionally grown grains and legumes as part of a Farm to School program; 6 different cases studies from around the U.S.
- Introduce children to new plant-based foods (e.g., lentils, barley, dry beans, tofu, wheatberries & others)
- Introduce children to new plant-based foods (e.g., lentils, barley, dry beans, tofu, wheatberries & others)

**Source: Using Regionally Grown Grains and Pulses in School Meals**  
**(January 2015 – Institute for Agriculture and Trade Policy)**  
**[http://www.iatp.org/files/2015\\_02\\_02\\_GrainsAndPulses\\_EMV.pdf](http://www.iatp.org/files/2015_02_02_GrainsAndPulses_EMV.pdf)**

## Top Grain-Producing States<sup>4</sup>

State	Barley (bushels)	Buckwheat (bushels)	Emmer and spelt (bushels)	Oats for Grain (bushels)	Millet (bushels)	Rice (cwt)	Rye (bushels)	Wheat for grain, all (bushels)
North Dakota	#1	#1		#3	#5		#13	
Idaho	#2							#2
Montana	#3	#4	#5					
Washington	#4	#2						
Colorado	#5				#1			#4
Minnesota	#6	#5		#1			#8	#3
Wyoming	#7							
California	#8			#10		#2		#7
Arizona	#9							
Oregon	#10	#6						#5
Pennsylvania	#11	#7	#3	#7			#3	
New York		#3	#1	#8			#12	
Ohio			#2	#9				#11
Michigan			#4	#11			#5	
Wisconsin				#2			#4	
South Dakota				#4	#3		#9	
Iowa				#5				
Texas				#6	#4	#6	#11	#1
Nebraska					#2			#6
Florida					#6			
Kansas					#7		#7	
Arkansas						#1		
Louisiana						#3		
Missouri						#4		#10
Mississippi						#5		
Oklahoma							#1	
Georgia							#2	
North Carolina							#6	#8
Maine							#10	
Illinois								#9

**Source:** Using Regionally Grown Grains and Pulses in School Meals (January 2015 – Institute for Agriculture and Trade Policy)

[http://www.iatp.org/files/2015\\_02\\_02\\_GrainsAndPulses\\_EMV.pdf](http://www.iatp.org/files/2015_02_02_GrainsAndPulses_EMV.pdf)

# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet



*Why Should We Care?*



(i.e., The ways food and food choices are linked to planetary health.)

- Endocrine Disrupting Chemicals (EDCs)

# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet

## What are Endocrine Disrupting Chemicals (EDCs)?

“An exogenous [non-natural] chemical, or mixture of chemicals, that interferes with any aspect of hormone action.” – *Endocrine Society*

Endocrine disruptors are chemicals that may interfere with the body's endocrine system and produce adverse developmental, reproductive, neurological, and immune effects in both humans and wildlife. – (NIEHS, Dec. 2013)

# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet

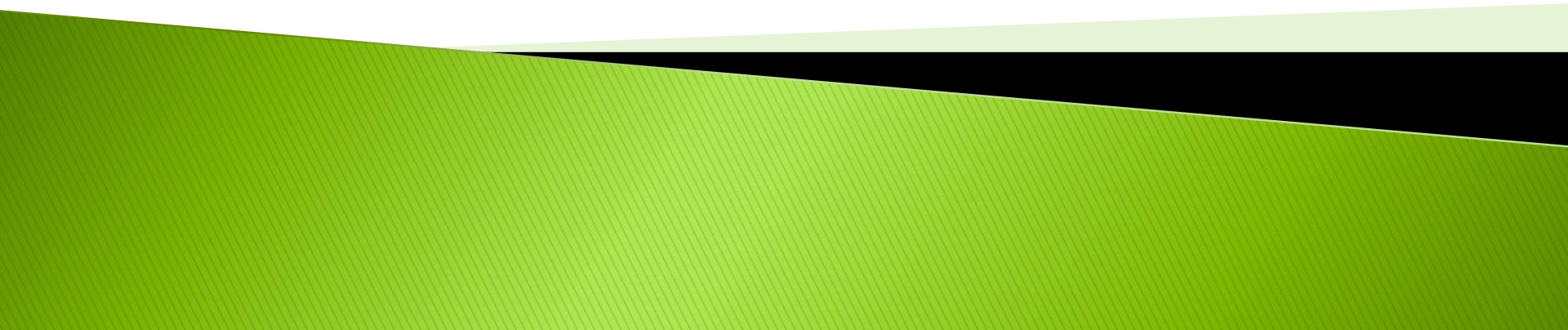
## What are Endocrine Disrupting Chemicals (EDCs)?

- Approximately 1,000 potential EDCs have been identified (The Endocrine Disruption Exchange [TEDX], Dec. 2013)
- EDCs are a global & ubiquitous problem. Exposure occurs at home, at the office, on the farm, in the air we breathe, in the food we eat, and in the water we drink. (Endocrine Society & IPEN, Dec. 2014)



# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet

## What are Endocrine Disrupting Chemicals (EDCs)?

- EDCs are active at very low doses (non-monotonic dose-response curves).
  - EDC-linked dysfunction has been reported for virtually every organ and tissue of the body.
- 

How We Are Exposed to EDCs	Where EDCs Come From?
Oral consumption of contaminated food or water	Industrial waste or pesticides contaminating the soil and/or groundwater
Oral consumption of contaminated food or water	Leaching of chemicals from food or beverage containers; pesticide residues in food or beverages
Contact with skin and/or inhalation	Pesticides used in agriculture and the home

## Table: Examples of EDC Routes of Exposure in Humans

Adapted from – Gore A, et al. *Introduction to Endocrine Disrupting Chemicals (EDCs): A Guide for Public Interest Organizations and Policy-Makers*. Endocrine Society & IPEN, December, 2014. Available at:

<http://www.endocrine.org/~media/endosociety/Files/Advocacy%20and%20Outreach/Important%20Documents/Introduction%20to%20Endocrine%20Disrupting%20Chemicals.pdf>

Category/Use	Example EDCs
Pesticides	Chlorpyrifos, atrazine, 2,4-D, glyphosate
Food contact materials	BPA, phthalates
Children's products	Lead, phthalates
Personal care products	Phthalates
Electronics & Building materials	Brominated flame retardants, PCBs
Antibacterials	Triclosan
Textiles, clothing	Perflurochemicals

**Table:** Some Known EDCs and Their Uses

**Sources:** Gore A, et al. *Introduction to Endocrine Disrupting Chemicals*. Endocrine Society & IPEN, December 2014 and Trasende L, Zoeller T, Hass U, et al. Estimating the burden and disease costs of exposure to endocrine-disrupting chemicals in the European Union. *J Clin Endocrinol Metab* 2015. doi: 10.1210/jc.2014-4324. Available at: <http://press.endocrine.org/doi/pdf/10.1210/jc.2014-4324>

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*“Considering how many cancers involve hormones, such as prostate, breast, uterine and other reproductive tissues, it may not be surprising that estrogenic and other hormone-active chemicals such as BPA, phthalates, and some pesticides, are thought to contribute to carcinogenic risk.”*

**Source:** Gore A, Crews D, Doan L, et al. *Introduction to Endocrine Disrupting Chemicals (EDCs): A Guide for Public Interest Organizations and Policy Makers*. Endocrine Society & IPEN, December 2014; p. 21. Available at:

<http://www.endocrine.org/~media/endosociety/Files/Advocacy%20and%20Outreach/Important%20Documents/Introduction%20to%20Endocrine%20Disrupting%20Chemicals.pdf>

# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet

American Medical Women's Association urges patient education on Endocrine-Disrupting Chemicals (EDCs)

A joint statement by the American Medical Women's Association and the Breast Cancer Fund called for a reduction of exposures to endocrine-disrupting chemicals and urged physicians and healthcare providers to educate the public and their own patients about ways to avoid chemicals linked to endocrine disruption.

Source: <http://www.amwa-doc.org/wp-content/uploads/2013/12/AMWA-position-paper-on-Endocrine-Disruption-and-Breast-Cancer-Risk.pdf>

# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet

American Medical Women's Association urges patient education on Endocrine-Disrupting Chemicals (EDCs)

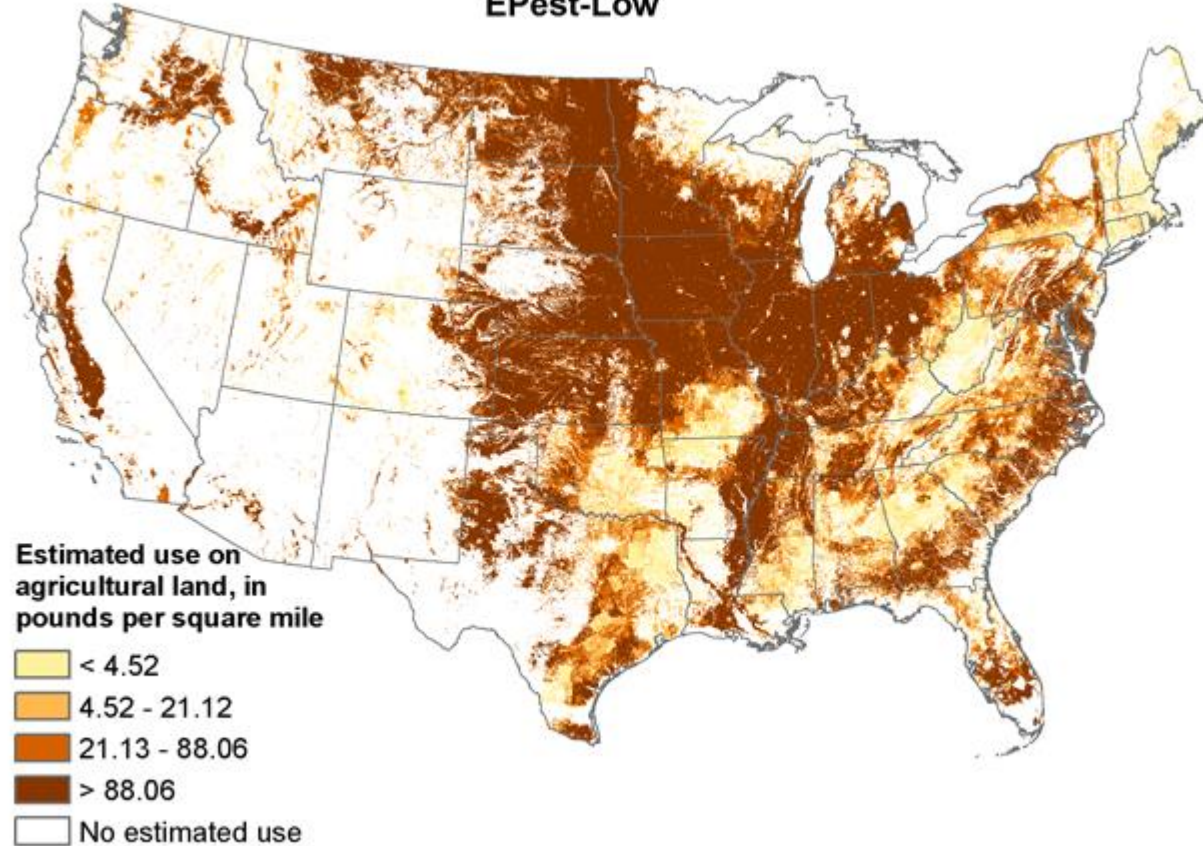
When possible, choose organic foods and purchase meat and dairy products without added hormones. Buying products grown organically reduces pesticide use, which is good for families, farmworkers and the environment.

Source: <http://www.amwa-doc.org/wp-content/uploads/2013/12/AMWA-position-paper-on-Endocrine-Disruption-and-Breast-Cancer-Risk.pdf>

# Estimated Agricultural Use – Glyphosate 2012

## Estimated Agricultural Use for Glyphosate, 2012

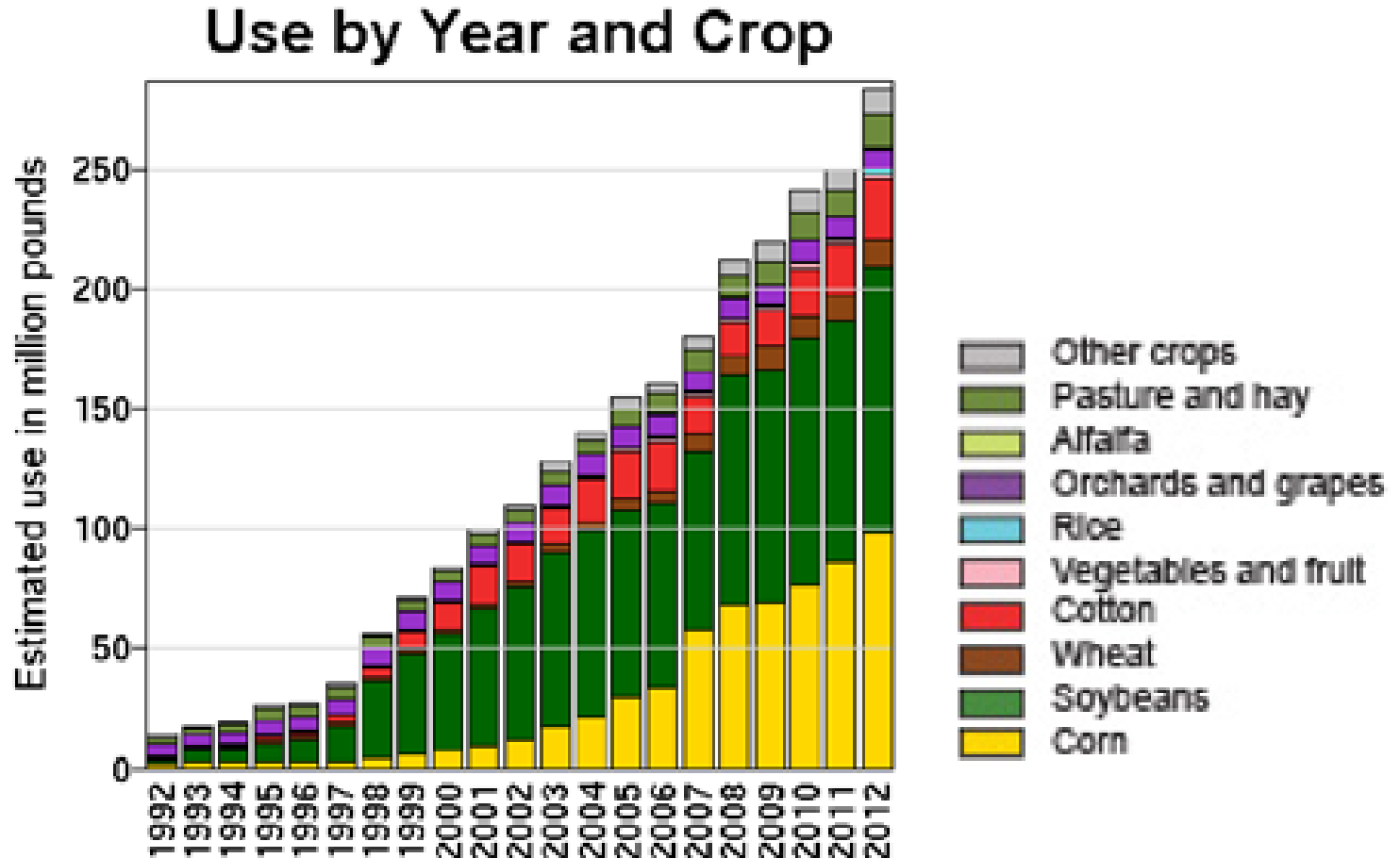
EPEst-Low



**Source:** U.S. Geological Survey (USGS). Available at:

[http://water.usgs.gov/nawqa/pnsp/usage/maps/show\\_map.php?year=2011&map=GLYPHOSATE&hilo=L&disp=Glyphosate](http://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php?year=2011&map=GLYPHOSATE&hilo=L&disp=Glyphosate)

# Estimated Agricultural Use - Glyphosate 2012



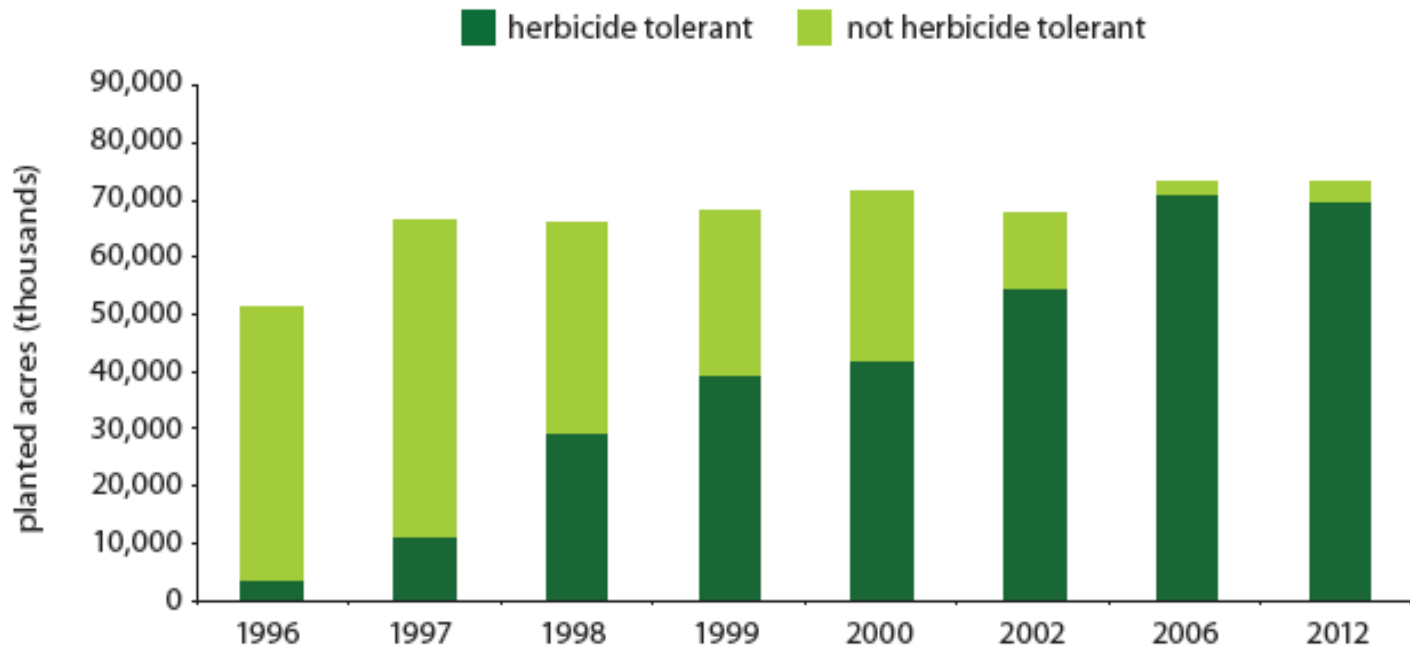
Source: U.S. Geological Survey (USGS). Available at:

[http://water.usgs.gov/nawqa/pnsp/usage/maps/show\\_map.php?year=2011&map=GLYPHOSATE&hilo=L&disp=Glyphosate](http://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php?year=2011&map=GLYPHOSATE&hilo=L&disp=Glyphosate)



# Planted Soybeans Acres by Herbicide Tolerance (1996–2012)

Fig. 1: Planted Soybean Acres by Herbicide Tolerance, 1996-2012

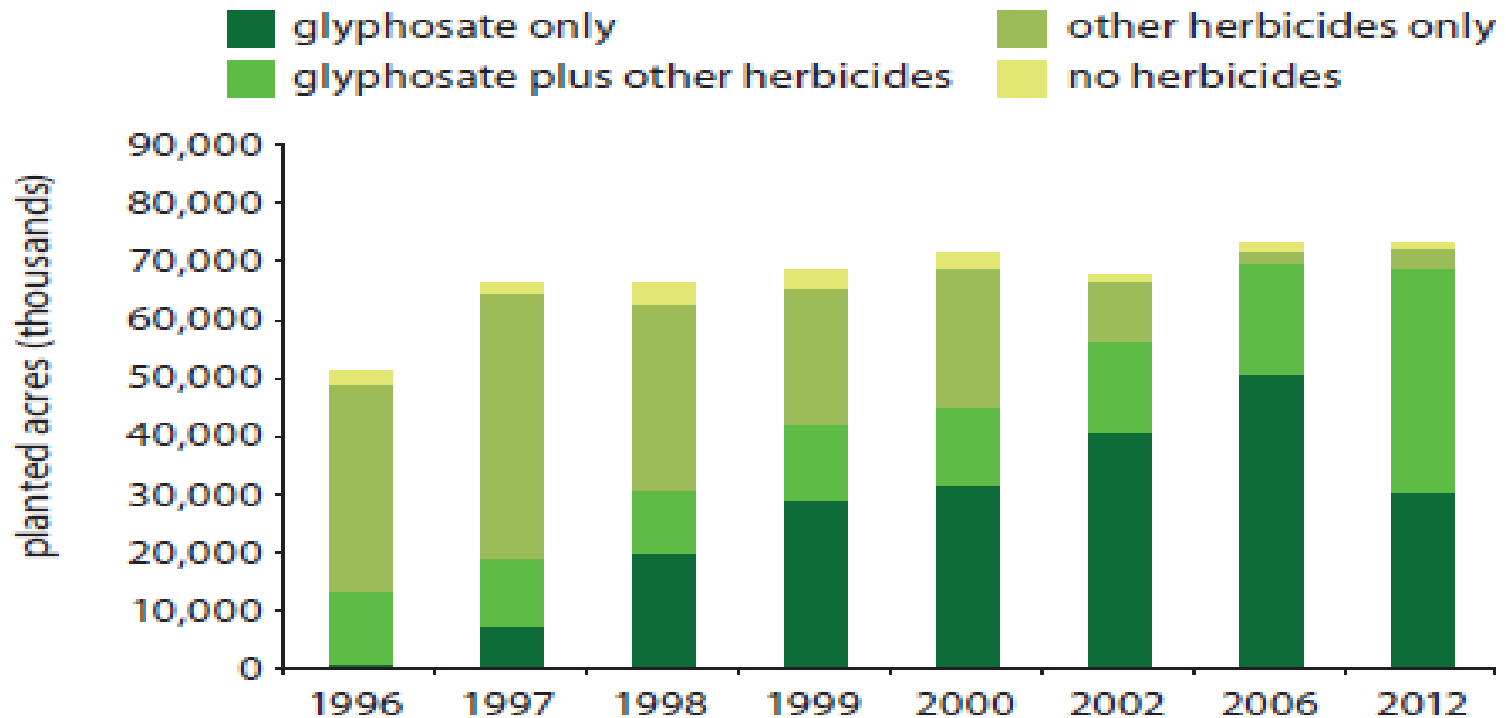


Source: USDA NASS.

Source: USDA. *NASS Highlights. Agricultural Resource Management Survey*. U.S. Soybean Industry. January 2014. No. 2014-1.

# Herbicide Use Practices on Soybean Acres (1996–2012)

Fig. 2: Herbicide Use Practices on Soybean Acres, 1996-2012



Source: USDA NASS.

Source: *USDA. NASS Highlights. Agricultural Resource Management Survey. U.S. Soybean Industry.* January 2014. No. 2014-1.

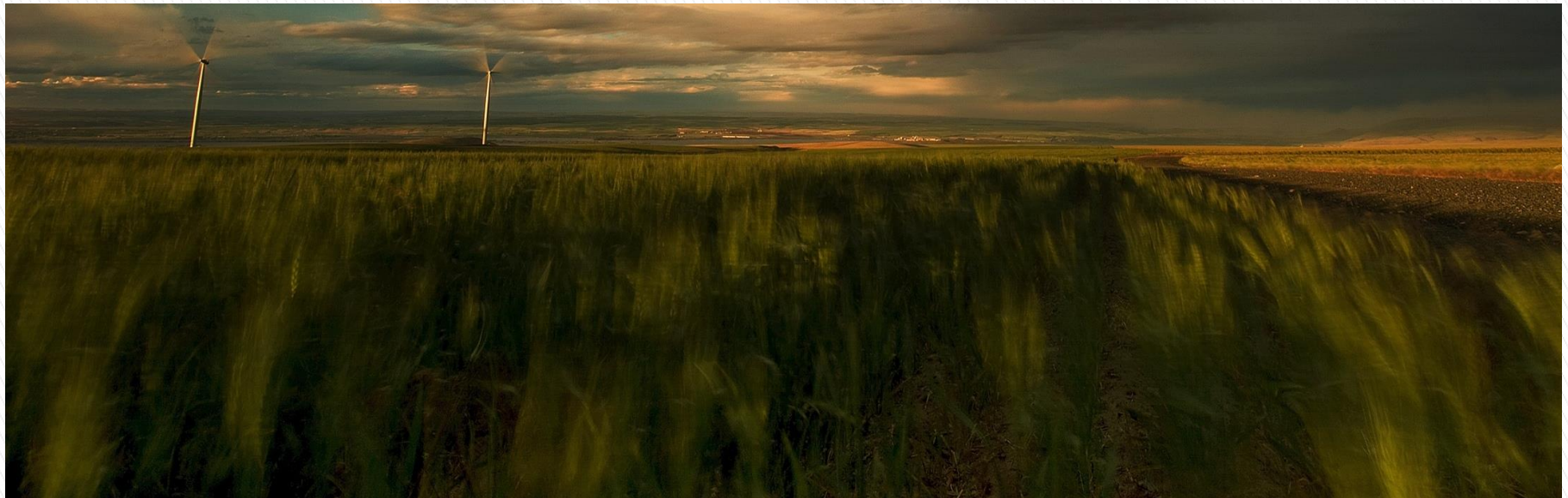
# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet

- GE soybeans contained the highest residues of glyphosate and AMPA (mean 3.3 and 5.7 mg/kg, respectively). Conventional and organic soybean batches contained none of these agrochemicals.
- Organic soybeans contained less total saturated fat and total omega-6 fatty acids than both conventional and GE soybeans.

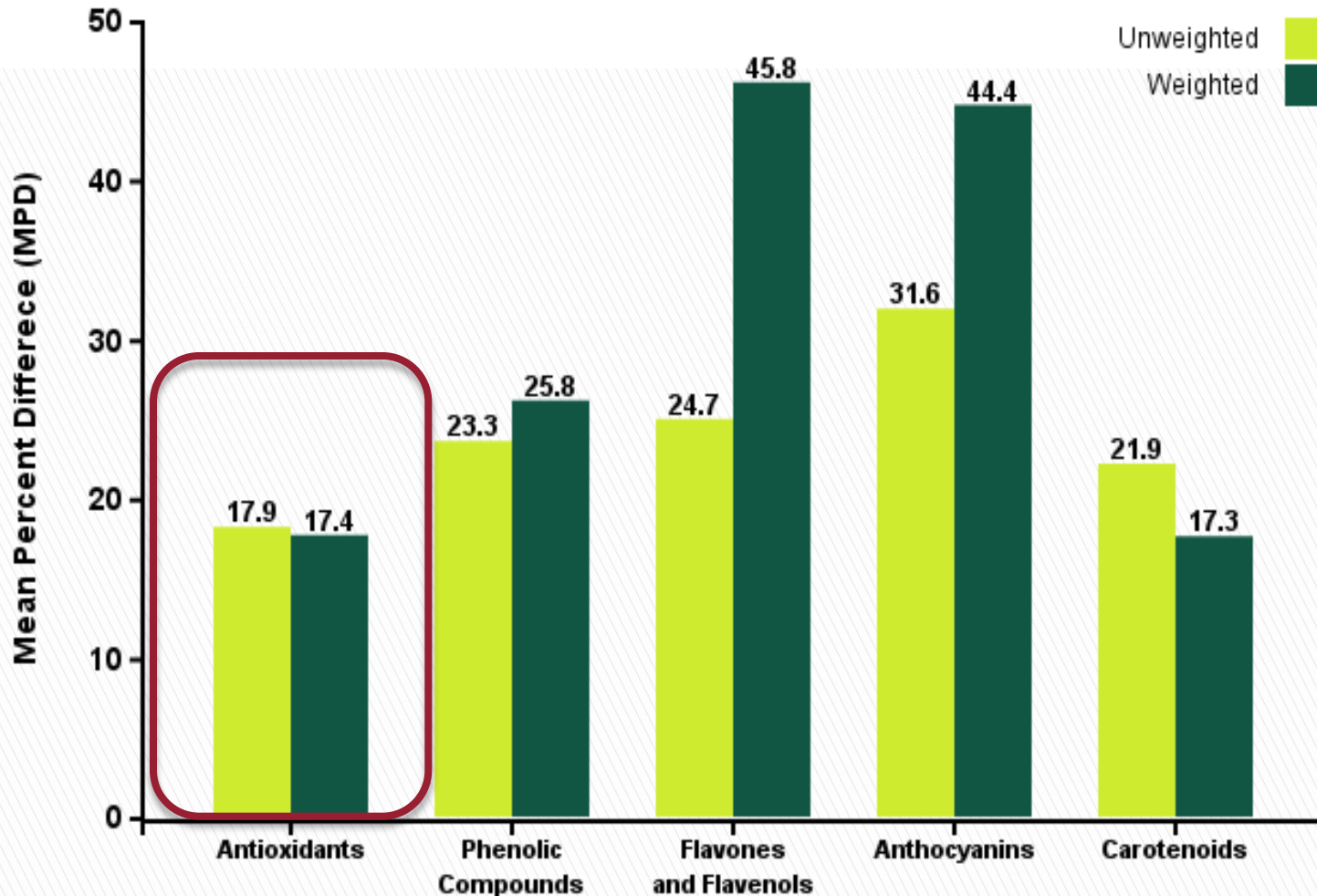
Source: Bohn T, Cuhra M, Traavik T, et al. Compositional differences in soybeans on the market: glyphosate accumulates in Roundup Ready GM soybeans. *Food Chemistry*. 2014;153:207-215.

## Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses

Marcin Barański<sup>1</sup>, Dominika Średnicka-Tober<sup>1</sup>, Nikolaos Volakakis<sup>1</sup>, Chris Seal<sup>2</sup>, Roy Sanderson<sup>3</sup>, Gavin B. Stewart<sup>1</sup>, Charles Benbrook<sup>4</sup>, Bruno Biavati<sup>5</sup>, Emilia Markellou<sup>6</sup>, Charilaos Giotis<sup>7</sup>, Joanna Gromadzka-Ostrowska<sup>8</sup>, Ewa Rembiałkowska<sup>8</sup>, Krystyna Skwarło-Sońta<sup>9</sup>, Raija Tahvonen<sup>10</sup>, Dagmar Janovská<sup>11</sup>, Urs Niggli<sup>12</sup>, Philippe Nicot<sup>13</sup> and Carlo Leifert<sup>1\*</sup>



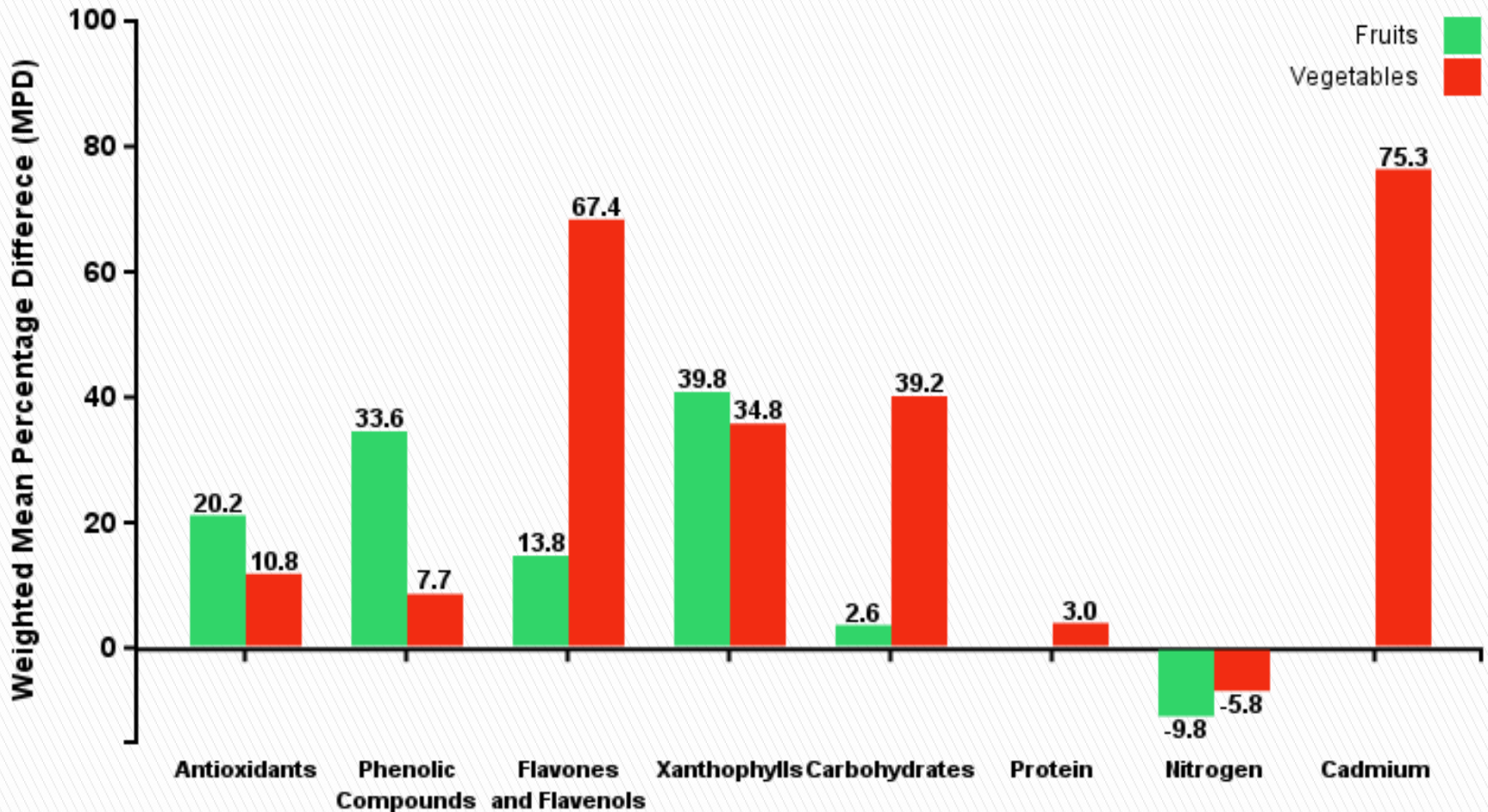
# Antioxidants over 17% higher in organic – average across 286 fruits and vegetables analyzed.



Baranski et al. *British Journal of Nutrition*. 2014;112:794–811.

# Cadmium in Vegetables

Cadmium over 75% higher in conventional over organic



Source: Table 10 of the supplemental data in Baranski et al. 2014.

## Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses

Standard meta-analyses showed that the **frequency of occurrence of detectable pesticide residues was four times higher in conventional crops (46 (95% CI 38, 55) %) than in organic crops (11 (95%, CI 7, 14) %).**

Significantly higher frequencies of occurrence of pesticide residues in conventional foods were also detected in data reported for fruits, vegetables, and processed crop-based foods were analyzed separately.

Conventional fruits had a higher frequency (75 (95% CI 65, 85) %) of occurrence of pesticide residues than vegetables (32 (95% CI 25, 43) %) and crop-based compound foods (45 (95% CI 25, 65) %).

# Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses

## Results: Summary

- \_ Organic crops have, on average, significantly higher levels of antioxidants than conventional crops. Average total antioxidant activity was 17% higher in organic versus conventional crops.
- Nitrogen concentrations were found to be significantly lower in organically-grown than conventionally-grown crops.
- Pesticide residues were four times more likely to be found in conventional crops than organic crops.
- Substantially lower concentrations of the toxic metal cadmium was also detected in organic plant-based foods (on average, 48% lower).





**HOME SWEET FARM – Brenham, TX**  
<http://www.homesweetfarm.com>

**Houston's Largest Community Supported  
Agriculture (CSA) Farm**

**Brenham Farmers' Market**

**Farm School**

**Dinner & Events**

# Resources for Organic and Local Foods:

*Know Your Farmer, Know Your Food*

<http://www.usda.gov/knowyourfarmer>

**Farm to School Resources (USDA)**

<http://www.fns.usda.gov/farmentoschool/farm-school-resources>

**Local Harvest**

<http://www.localharvest.org>

**Rodale Institute**

<http://rodaleinstitute.org>

**USDA's National Farmers' Market Directory**

<http://search.ams.usda.gov/FARMERSMARKETS>

# Hunger and Environmental Nutrition (HEN) Dietetic Practice Group (Academy of Nutrition and Dietetics, Dietetic Practice Group #15)

## Benefits of Organically–Produced Foods: Review of Research and Implications for Practice

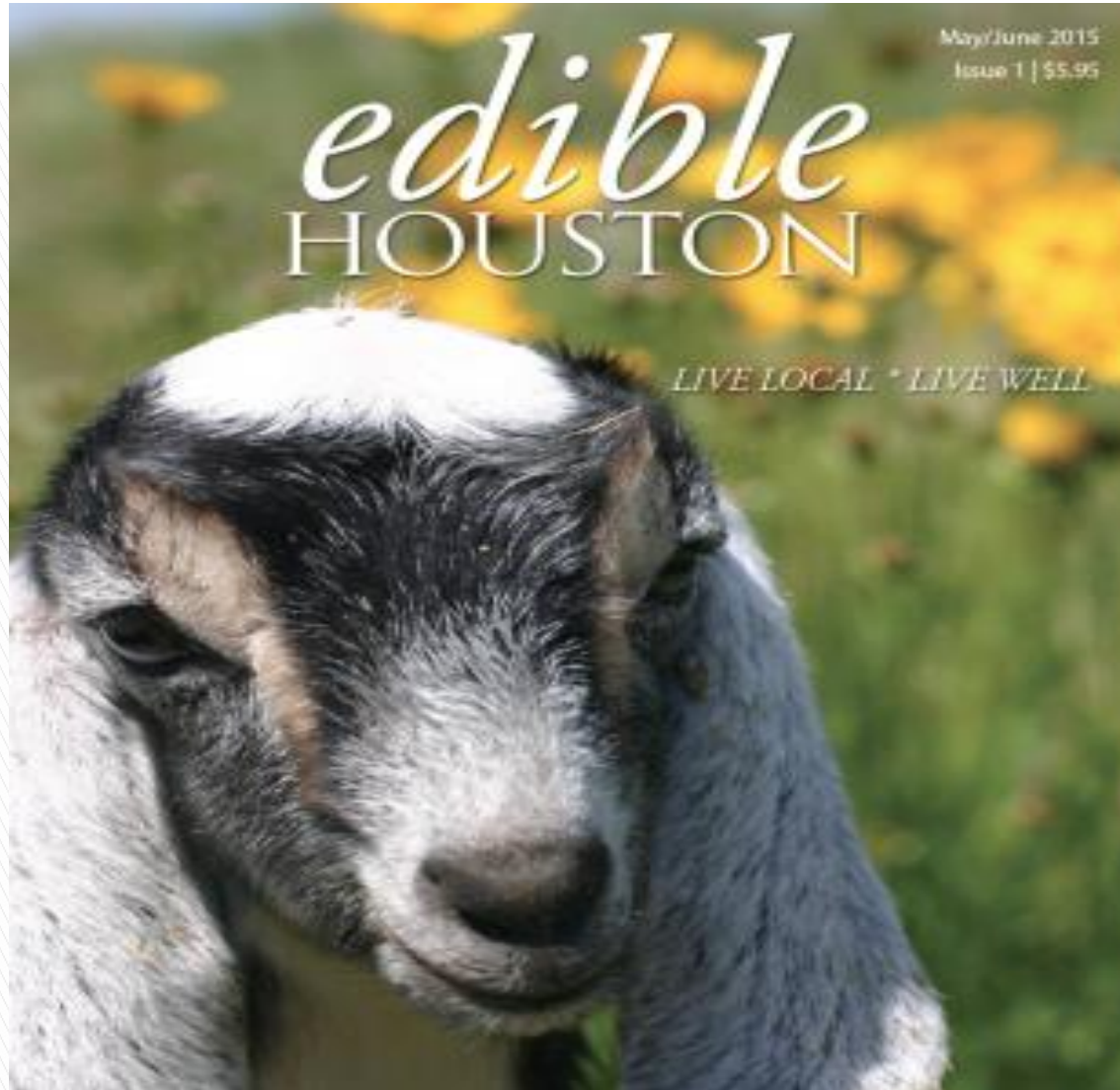
(Friday, April 17, 2015, 2:00–3:30pm ET/1:00–2:30pm CT/12:00–1:30pm MT/11:00am–12:30pm PT)

[www.eatright.org/dpgevents](http://www.eatright.org/dpgevents)

New studies, including systematic reviews and meta–analyses, have been published supporting the benefits of organically–produced foods, including benefits to consumers and the environment. This new research fuels the ongoing debate about the benefits of organic versus conventional foods. This webinar will provide an overview of this ongoing discussion, describe the new studies, and provide tips and tools for RDNs to use when discussing this topic with clients, other nutrition and health professionals, and the general public. A discussion of HEN's *Organic Talking Points (3<sup>rd</sup> edition)* will also be included.

**Presenters:** Christine McCullum–Gomez, PhD, RD; Kristine Nichols, PhD, Rodale Institute

Edible Feast Magazines:  
<http://houston.ediblefeast.com>



# The Food on Our Plates: Evidence Linking Healthy Food to a Healthy Planet



*Why Should We Care?*



(i.e., The ways food and food choices are linked to planetary health.)

- Waste – Food and Food Packaging

# Food Waste

- 33% of all food is wasted
- \$750bn = cost of waste food
- 28% of farmland grows food that will be thrown away
- 6–10% of greenhouse gases come from wasted food
- 39% of household food waste is fruit & vegetables

Source: UN/FAO; Hepker C. Food waste reduction could help feed world's starving. *BBC News*. July 2 2014; UN FAO. *Food Losses and Waste in the Context of a Sustainable Food System*. June 2014. Available at: [http://www.fao.org/fileadmin/user\\_upload/hlpe/hlpe\\_documents/HLPE\\_Reports/HLPE-Report-8\\_EN.pdf](http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-8_EN.pdf)

# Food Waste

“All of us – farmers and fishers; food processers and supermarkets, local and national governments; individual consumers – must make changes at every link of the human food chain to prevent food wastage from happening in the first place, and re-use or recycle it when we can’t.”

– *FAO General-Director, Jose Graziano da Silva*

Sources: UN FAO; Food waste reduction could help feed world’s starving.  
*BBC News*. July 2 2014.



**Figure 1. Food Wastage Pyramid on Its Head**

food wastage = 'any food lost by deterioration or discard.'  
'Wastage encompasses food loss and food waste.' *FAO Toolkit:  
Reducing the Food Wastage Footprint*, Rome, Italy: UN FAO; 2013.  
Available at: <http://www.fao.org/docrep/018/i3342e/i3342e.pdf>



# Tips for Reducing Food Waste

- Write a list!
- Stick to the list...
- Purchase 'less than perfect looking' fruits & vegetables
- Keep a healthy fridge (including the temperature)
- Don't throw it away!
- Learn to understand sell-by and best-before dates
- Use up your leftovers



*Source: FAO Toolkit: Reducing the Food Wastage Footprint, Rome, Italy: UN FAO; 2013. Available at:*

<http://www.fao.org/docrep/018/i3342e/i3342e.pdf>

## Tips for Reducing Food Waste

- Rotate (i.e., bring older items to the front – fridge & cupboards)
- Serve small amounts
- Buy what you need
- Freeze!
- Don't throw it away!
- Turn waste into garden food (e.g. compost bin for fruit & vegetable peelings, for cooked food waste – kitchen composter [bokashi bin])

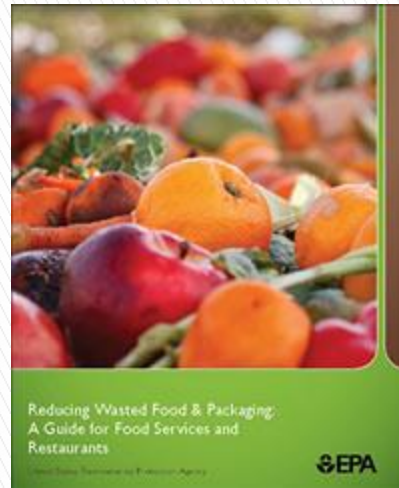


*Source: FAO Toolkit: Reducing the Food Wastage Footprint, Rome, Italy: UN FAO; 2013. Available at:*

<http://www.fao.org/docrep/018/i3342e/i3342e.pdf>

# EPA's Reducing Wasted Food & Packaging Toolkit

“The free toolkit includes a [guide \(pdf\)](#) and a [spreadsheet tracking tool \(.xls\)](#) to help food service facilities identify and implement opportunities to reduce food and packaging waste, which saves money and reduces environmental impacts.”



[http://www.epa.gov/foodrecovery/docs/reducing\\_wasted\\_food\\_pkg\\_tool.pdf](http://www.epa.gov/foodrecovery/docs/reducing_wasted_food_pkg_tool.pdf)

Additional Reference: *EPA's Reducing Wasted Food & Packaging Toolkit.*

<http://www.epa.gov/region9/organics/foodtool/>

# RD/DTR Tools for Developing Strategic Planning & Negotiation Skills in Creating Sustainable, Resilient and Healthy Food and Water Systems

**Standards of Professional Performance for RDNs in Sustainable, Resilient, and Healthy Food and Water Systems** (*Journal of the Academy of Nutrition and Dietetics*; 2014;114:475–488) –

[www.andjrnl.org/article/S22122672%2813%2901682-1/fulltext](http://www.andjrnl.org/article/S22122672%2813%2901682-1/fulltext).

- *A tool for RDs and RDNs working in sustainable, resilient, and healthy food and water systems to assess their current skill levels and identify areas for further professional development in this emerging practice area.*

**Everyone Plays a Part! Exploring the New SOPP in Sustainable, Resilient, and Healthy Food and Water Systems** (HEN DPG webinar, July 2014) –

<http://www.hendpg.org/page/webinar-archives>

*Provides an overview of the SOPP, how RDs and RDNs in different areas of practice are applying the SOPP to their work, and resources available to supporting applying the SOPP to your practice.*

# RD/DTR Tools for Developing Strategic Planning & Negotiation Skills in Creating Sustainable, Resilient and Healthy Food and Water Systems

*2014 FNCE Session: Healthy Food and Safe Water: A New Era of Dietetic Practice* – Angie Tagtow, MS, RD, LD, Stacia Clinton, RD, LD & Barbara Hartmann, MS, RD, LD, moderated by Dianne Lollar, MPH, RD, LD  
<http://fnce.eatright.org/fnce/SessionDetails.aspx?SessionID=40775>

- *Food Policy Networks & Food Policy Council Directory* (Johns Hopkins University Center for a Livable Future) –  
<http://www.foodpolicynetworks.org>

[www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/projects/FPN/directory/online/](http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/projects/FPN/directory/online/)

*Includes contact information for FPCs across the U.S. and Canada.*

## FOOD FOR THOUGHT:

As Nelson Mandela once said,

**"It always seems impossible until it is done."**

(Caryl M. Stern – President and CEO of U.S. Fund for UNICEF, & author of *I BELIEVE IN ZERO – Learning from the World's Children. Zero Hunger, Zero Poverty, Zero Disease*. St. Martin's Press, New York, 2013, p. 133.)

**QUESTIONS?**

**THANK YOU!**