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Professional Education Series

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First Do No Harm: What Health Care Providers Need to Know about Organic Food and Agriculture

TODAY'S AGENDA:

- Introduction & Housekeeping
- Speaker Introduction
- Presentation
- Q&A
- Closing

WEBINAR HOST:

Keith Hine M.S., R.D.
Sr. Director of Healthcare & Sports
Orgain

WEBINAR PRESENTER:

Melinda Hemmelgarn M.S., R.D.
Food Sleuth, LLC

First Do No Harm:
What Health Care Providers Need to Know about ***Organic*** Food & Agriculture

Melinda Hemmelgarn, M.S., R.D.
Food Sleuth ®
12-9-2020

Menu

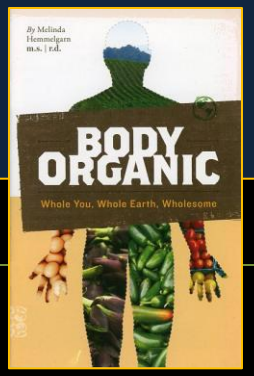
- Introduction, Background and Overview
  - Health care - food - agriculture
  - *Urgent* issues ⇨ organic solutions

- Organic food/farming:
  definitions, challenges and trends

- Nutrition/Health benefits

- Critical questions and resources

Disclosures



- Former consultant Organic Valley
- Board member: Organic Farming Research Foundation 2010-2016
- Board member: Midwest Organic and Sustainable Education Service 2009-2017
- Board member: Beyond Pesticides 2015-present

BEYOND PESTICIDES
Protecting Health and the Environment with Science, Policy and Action
www.beyondpesticides.org

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AND: Professional Ethics

"The dietetics practitioner considers the health, safety and welfare of the public at all times."

JADA August 2009

© Melinda Hemmelgarn, Food Sleuth®, LLC

Precautionary Principle:

"Precautionary measures should be taken when an activity raises threats of harm to human or environmental health, *even when cause and effect relationships have not been fully established scientifically*."

Rio Declaration of the 1992 Earth Summit convened by the United Nations.
ADA Sustainable Food System Task Force Report.

Education

Advocacy

Translation

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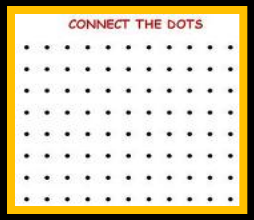
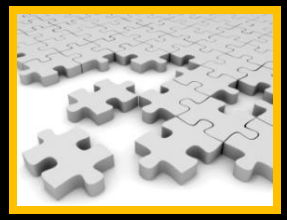
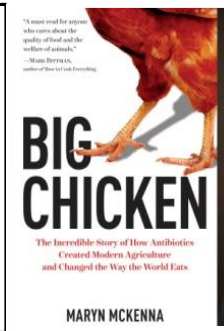
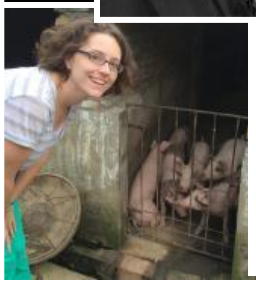
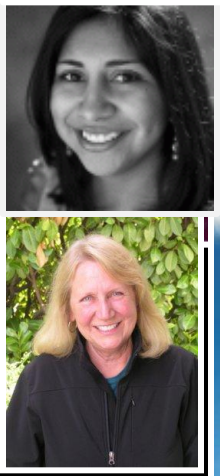
Food Sleuth Radio
"Food Truth"











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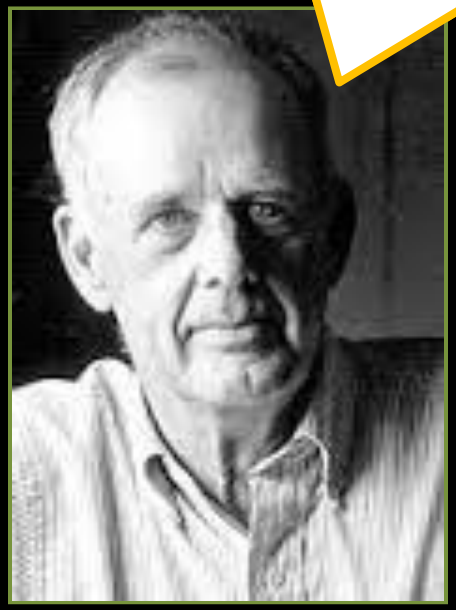
“To be interested in food but not in *food production* is clearly absurd.”

Wendell Berry, KY Farmer, Poet



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"The food we eat and ***how we grow, produce, market and distribute*** *it have enormous implications for the public's health."*

-- Georges Benjamin, M.D.
Executive Director, APHA

APHA
AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.

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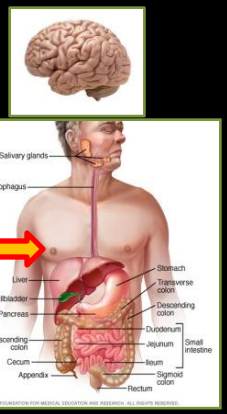
Urgent health issues / *Organic* solutions

- CLIMATE
- COVID-19

- Antibiotic Resistance



- Microbial integrity/
  Dysbiosis

- Environmental contaminants
  plastics / heavy metals/ pesticides

- Loss of Biodiversity → ↓ Resilience

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*" In order to stave off the mass extinction of species, including our own, we must move swiftly to preserve the **biodiversity** of our planet." ~*
E.O. Wilson, Ph.D. Harvard U.

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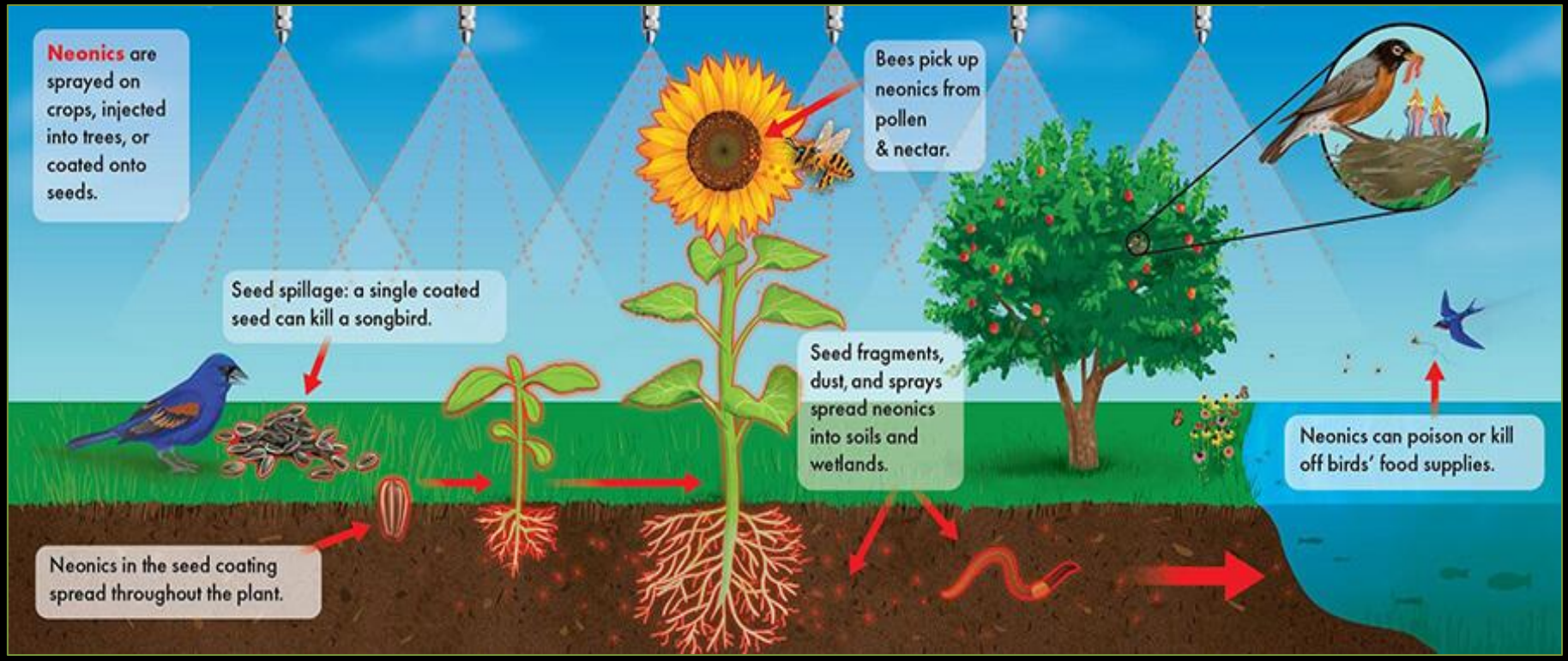
Neonicotinoid seed coatings

American Bird Conservancy



https://abcbirds.org/neonics

Doug and Anna Crabtree
Havre MT

VILICUS FARMS

2021-2030:
UN Decade on Ecosystem Restoration

Food and Agriculture Organization (FAO)

soil erosion; *pollinator protection*

www.decadeonrestoration.org/

What is *organic farming*?

"*A production system that is managed to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.*"

USDA

© Food Sleuth®, LLC

Organic agriculture is a food production system that:

- *Is informed by Nature;*
- *Enhances soil health;*
- *Protects and supports ecosystems;*
- *Provides safe and healthy food;*
- *Connects farmers, eaters and all those between around common values (see above);*
- *Allows eaters to support a sane and healthy agri-Culture; and*
- *Supports good stewardship.*

USDA Organic *integrity*

- **NO:** antibiotics, hormones, synthetic pesticides and fertilizers, sewage sludge, irradiation, gene editing and genetically modified organisms (GMOs).
- **Livestock:** certified organic feed; access to outdoors/ pasture.
- Emphasis on *continual improvement*:
  soil health * water quality * biodiversity
- Legal standards & 3rd party certification/inspection
  = *consumer protection & trust*

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www.usda.gov/media/blog/2012/03/22/organic-101-what-usda-organic-label-means

The **Organic Foods Production Act**

- Enacted under Title 21 - 1990 Farm Bill.
- Established ***uniform national standards and oversight*** for foods labeled "*organic*."
- Authorized USDA's **National Organic Program (NOP)**
  - Sets *national standards* for production, handling, and processing of organically grown agricultural products.
  - Oversees certification.
- Established the **National Organic Standards Board (NOSB)** - advises the Sec. of Ag. in setting national standards.

www.ams.usda.gov/about-ams/programs-offices/national-organic-program

USDA Organic:
National List of Allowed and Prohibited Substances

In general…

- *synthetic* substances prohibited for crop and livestock production *unless specifically allowed*;
  -Ex.: *Plastic mulch (petroleum-based other than polyvinyl chloride (PVC)). Must be removed at the end of the growing season.*

- *Non-synthetic (natural)* substances allowed for crop and livestock production *unless specifically prohibited*.
  -Ex.: *arsenic, strychnine, rotenone*

https://www.ams.usda.gov/rules-regulations/organic/national-list

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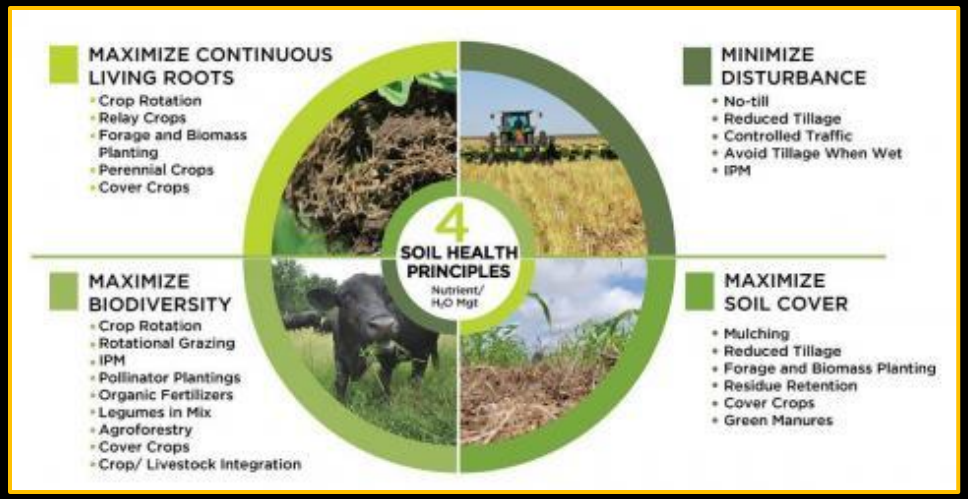
Do Organic Farmers Use Pesticides?

- They *can*, BUT…
  * **soil health → plant vigor**



"The occurrence of pesticide residues on organic produce is considerably lower than the occurrence on conventional produce."

-- USDA

- Physical, mechanical or biologically based farming methods FIRST. Then natural, allowable substances.

- Organic Materials Review Institute: www.omri.org

*www.ams.usda.gov/sites/default/files/media/Pesticide%20Residue%20Testing_Org%20Produce_2010-11PilotStudy.pdf

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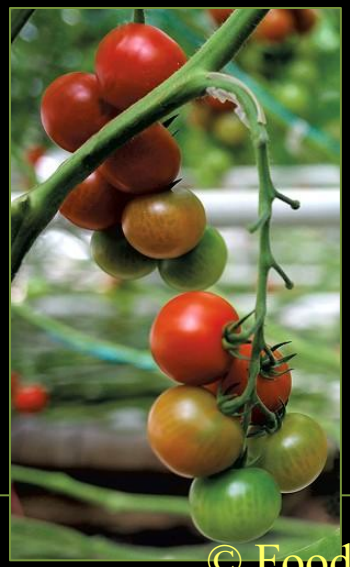
David & Lise Abasz, Round River Farm, Finland, MN

- Identification
- Balance
- Barriers
- Timing
- Biologically based

© Food Sleuth®, LLC

Dave Chapman, Long Wind Farm, Thetford, VT

- Greenhouse production
- Pyrethrum spray (approved, natural pesticide)
- Beneficial insects – aphid parasites released every week, year round.
- Soil health.



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Organic Certification: Farmers & Handlers

- Document practices and procedures:
  "organic systems plan"
  3 yr. transition period

- Annual on site inspections:

  - record keeping/plan: seed sources, soil conditions, crop health, weed and pest management, water systems, inputs, contamination and commingling risks and prevention.

- *Implement preventative practices that buffer their farms from GMO pollen and pesticide* ***drift/contamination***.

- Certification costs
  - USDA Organic Cost Share

  www.usda.gov/media/blog/2012/03/22/organic-101-what-usda-organic-label-means

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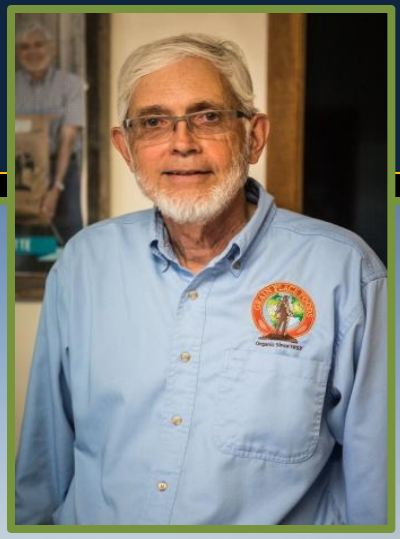
Dave Vetter, Marquette, NE



"How Your Food is Produced Does Matter"

© Food Sleuth®

Bader Peach Farm, Campbell, MO

stl TODAY ST. LOUIS POST-DISPATCH

Jury awards $265 million to Bader Farms in lawsuit against Bayer, BASF

© Food Sleuth®, LLC

BAYER-MONSANTO'S DICAMBA DRIVES LARGEST ARKANSAS HONEYBEE BUSINESS OUT OF ARKANSAS.

GMO FREE USA

GMO FREE CANADA

Bee on wild Buttonwillow by Susan Eileen Evans

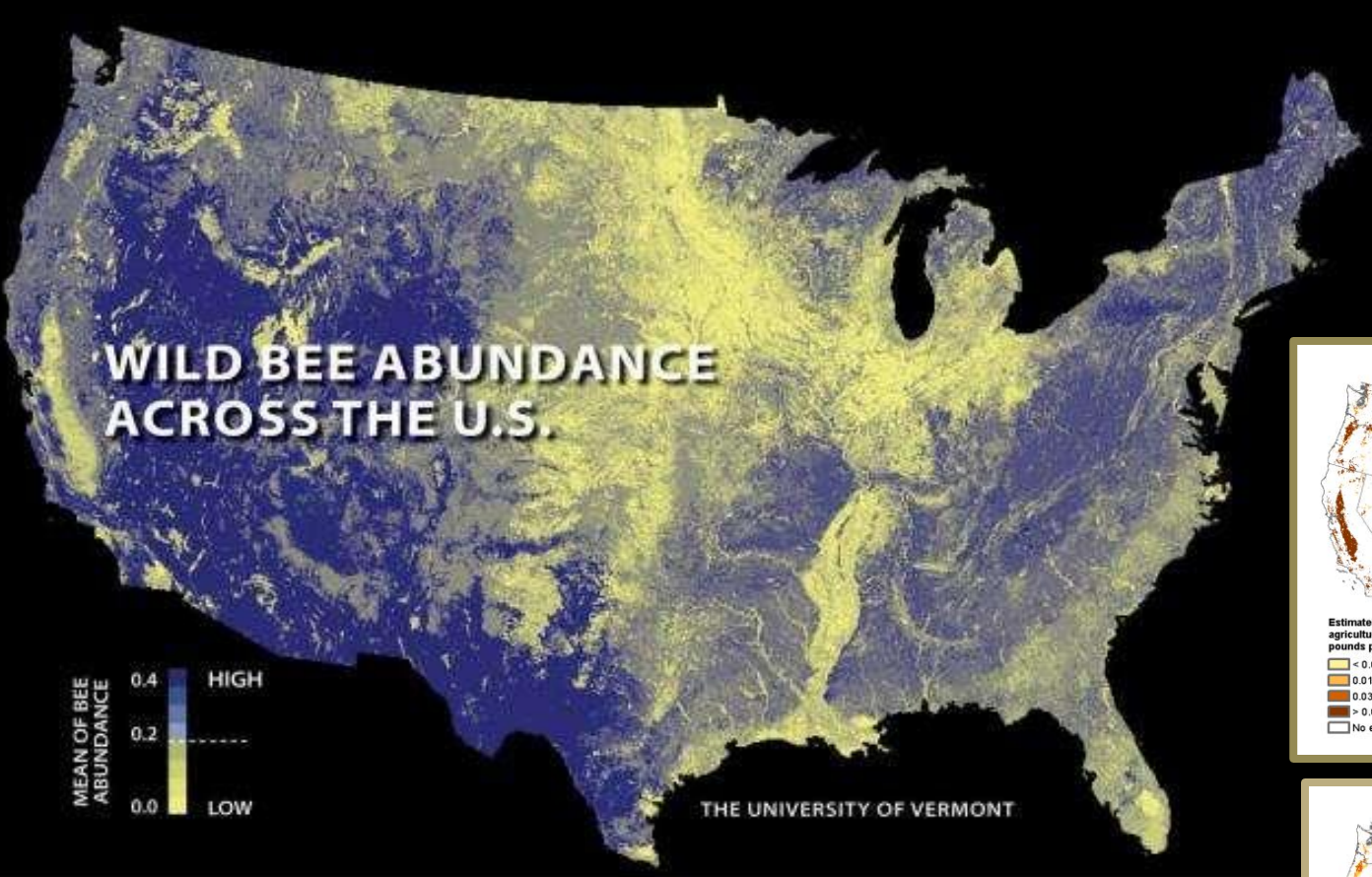
Dicamba is killing the wild, native redvine and buttonwillow the bees need to produce honey.

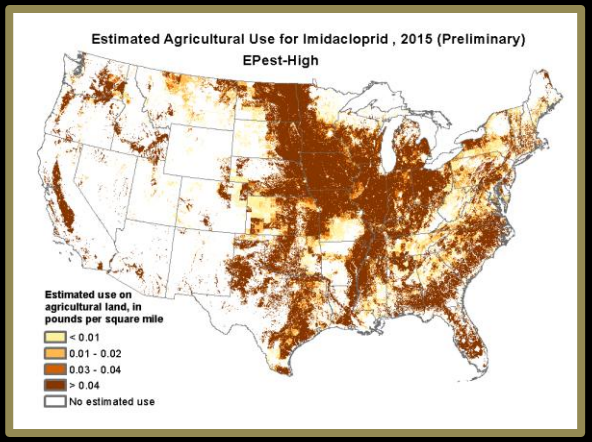
"PRODUCTION IS SO FAR DOWN, WE CAN'T STAY IN OPERATION."

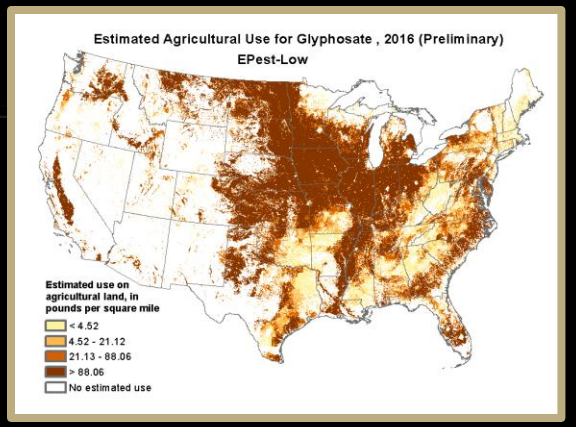
—Richard Coy, Coy Honey Farms
Forced by Bayer to move his bees to the Mississippi Gulf Coast.

www.facebook.com/gmofreeusa www.gmofreeusa.org www.facebook.com/gmofreecanadagroup

Organic Farming Protects Biodiversity & Pollinators







PNAS doi:10.1073.pnas.1517685113)

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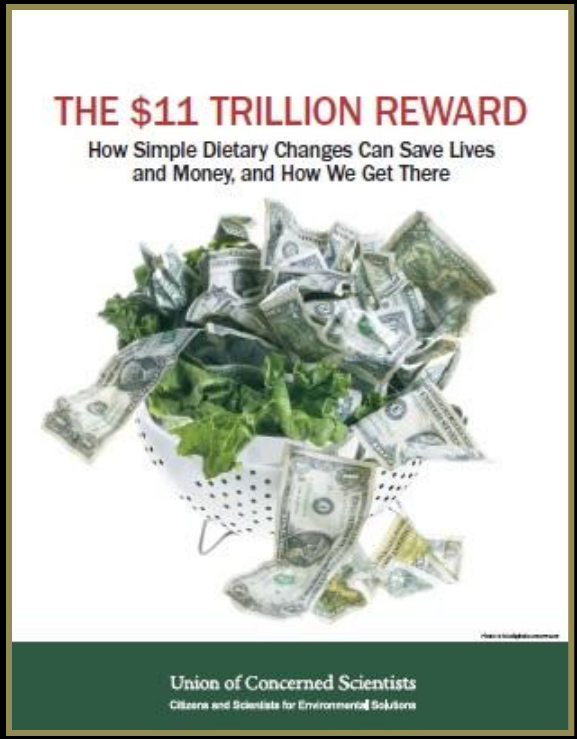
Medically / economically important crops



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"When I purchase food or beverage, a product containing only organic ingredients is important…"

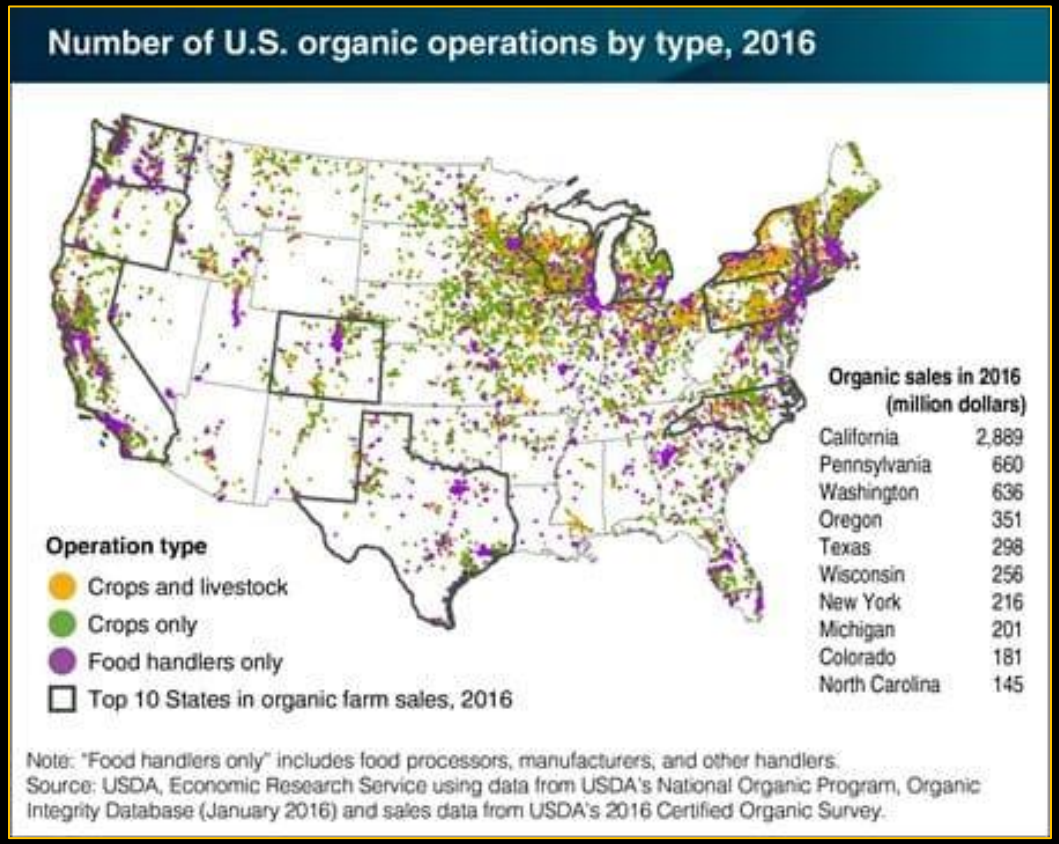
Natural Marketing Institute 2017

Trends: U.S. certified organic operations

2019: 16, 585 farms/ 5.5 million acres

$9.93 billion sales

Health Care Without Harm



www.nass.usda.gov/organics

The Farm
Saint Joseph Mercy Health System

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Pandemic Food Trends

*"The pandemic is moving consumers to focus on health, **boosting the popularity of organic foods**."*

* Organic food and drinks sales grew 25% in the 17 week period ending June 27. (Food Institute Focus)

** Online searches for immunity through food rose 27% by March.* (RodaleInstitute.org)

https://foodinstitute.com/focus/organic-gains-popularity/July 18, 2020

Mythbusting: Labels

- **Organic = non-GMO**

- Non GMO ≠ Organic

- Local ≠ Organic

- Natural ≠ Organic

- Natural ≠ non-GMO*

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*www.forbes.com/sites/bethkaiserman/2018/08/28/general-mills-to-remove-natural-label-from-granola-bars-after-glyphosate-lawsuit/?sh=3d3dd0cb73c9

GMO labeling (USDA) = "BE"
"*Bioengineered*"

- Certified organic foods *cannot* contain BE / GMO ingredients.
- Prototypes:

https://sustainableagriculture.net/blog/bioengineered-labeling-rule-will-cause-further-confusion/

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GMO/ BE labeling *exemptions*:

- Eggs, dairy, and meat that are produced from an animal fed bioengineered (GMO) feed are not considered a bioengineered food and won't carry the BE label.

  Ex.: milk from a cow fed BE alfalfa is not considered a BE food just because the cow ate BE alfalfa. If other ingredients are added to the milk, then the other ingredients may trigger a bioengineered food disclosure.

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exemptions at 7 CFR 66.5(d),

BE Label Exemptions & Exceptions

- BE food sold by a very small food manufacturer (annual sales < $2.5 million).
- Food served in restaurants, food trucks, airplanes, etc.
- Food products that contain an unavoidable or accidental presence of a BE substance of up to 5% per each ingredient in the final product.
- Food that was modified through BE but does not contain detectable genetic material.
  Ex. soybean oil, HFCS

Read ingredient labels: Genetically engineered crops/ foods

corn, cotton,
soy, canola, sugar beets, alfalfa

papaya
eggplant
summer squash
pink-flesh pineapple

Arctic apple
Innate potato

Salmon

Golden rice, banana

Nutritional Benefits of Organic Foods

- Higher levels of omega-3 fatty acids *pasture* raised meat and dairy
- Higher levels of antioxidants/anti-inflammatory compounds, vitamins, minerals
- ↑ soil quality → ↑ nutrients in produce
  - Better taste.

*Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: A systematic literature review and meta-analyses. *British Journal of Nutrition,* 2014, *112*(5), 794-811. doi:10.1017/S0007114514001366

*Nutritional quality and safety of organic food. A review. Agronomy for Sustainable Development, Springer Verlag/EDP Sciences/INRA, 2010, 30 (1), pp.33-41. 10.1051/agro/2009019.hal-00886513

*www.organic-center.org;

*Rodale Institute's Farming Systems Trial®

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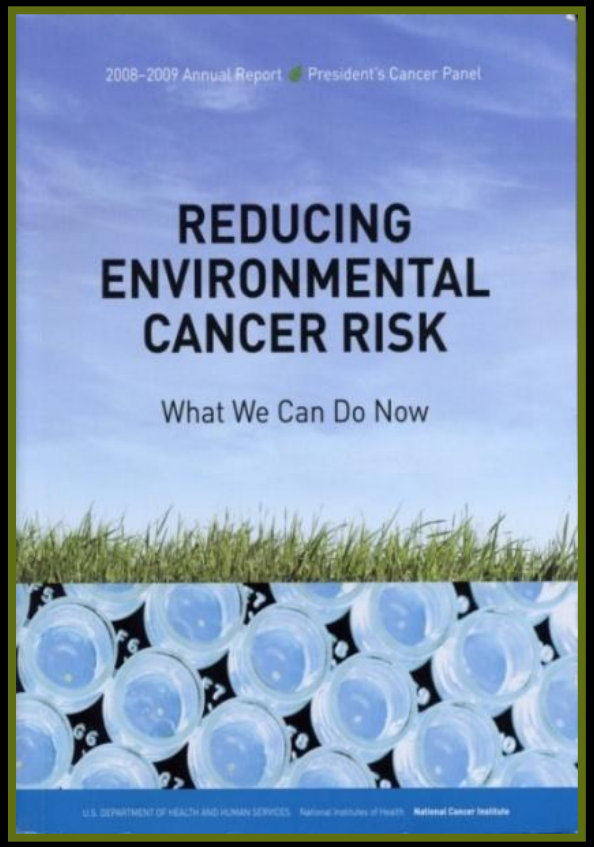
“Beauty” Sacrifice

Apple scab influence on apple nutrition:
https://elizapples.com/2015/02/17/whoa-there-apple-scab-is-a-healthy-thing

© Food Sleuth®

President's Cancer Panel Report



- *Choose food grown w/out pesticides and chemical fertilizers.*
- *Eat free range meat raised w/out antibiotics and growth hormones.*
- *Filter tap and well water.*
- *Farmers, **children**: ↑ risk*
- *Become an active VOICE.*

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Association of Frequency of Organic Food Consumption With Cancer Risk

JAMA Internal Medicine

- N= 68,946; 78% female;
  May 2009-Nov 2016
- High organic food scores were inversely associated with the overall risk of cancer.
  - post-menopausal breast cancer; NHL, and all lymphomas.

Association of Frequency of Organic Food Consumption With Cancer Risk: Findings From the NutriNet-Santé Prospective Cohort Study. *JAMA Intern Med.* 2018;178(12):1597–1606. doi:10.1001/jamainternmed.2018.4357

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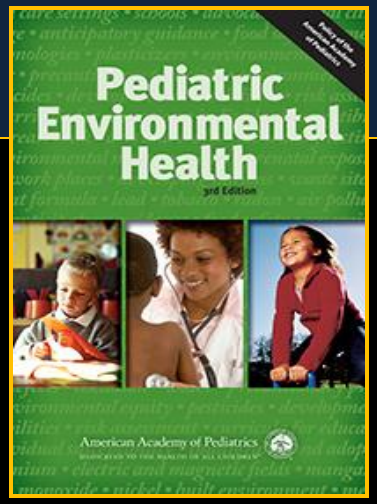
American Academy of Pediatrics: Policy Statement Pesticide Exposure in Children

- Children have unique susceptibilities.
- Diet may be most influential source.
- Early life exposure → cancer, ADHD, Autism, ↓ I.Q.

2012 Nov. AAP Council on Environmental Health Policy Statement: Pesticide Exposure in Children

Jan 2019 Pediatr Res 85(2):234-241.
doi: 10.1038/s41390-018-0200-z. Epub 2018 Oct 8



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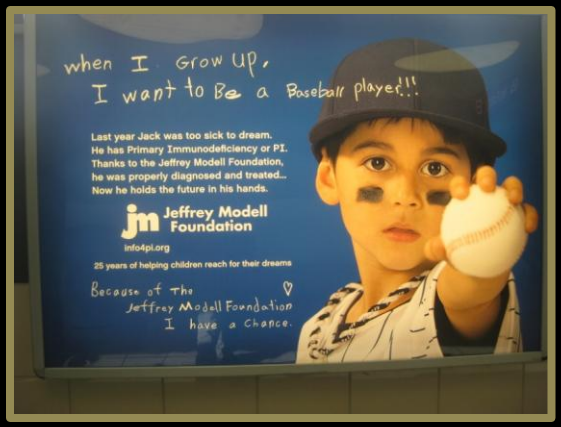
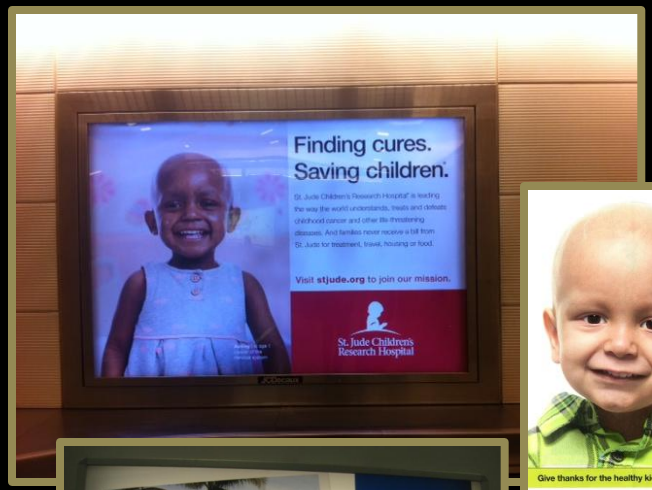
New normal?





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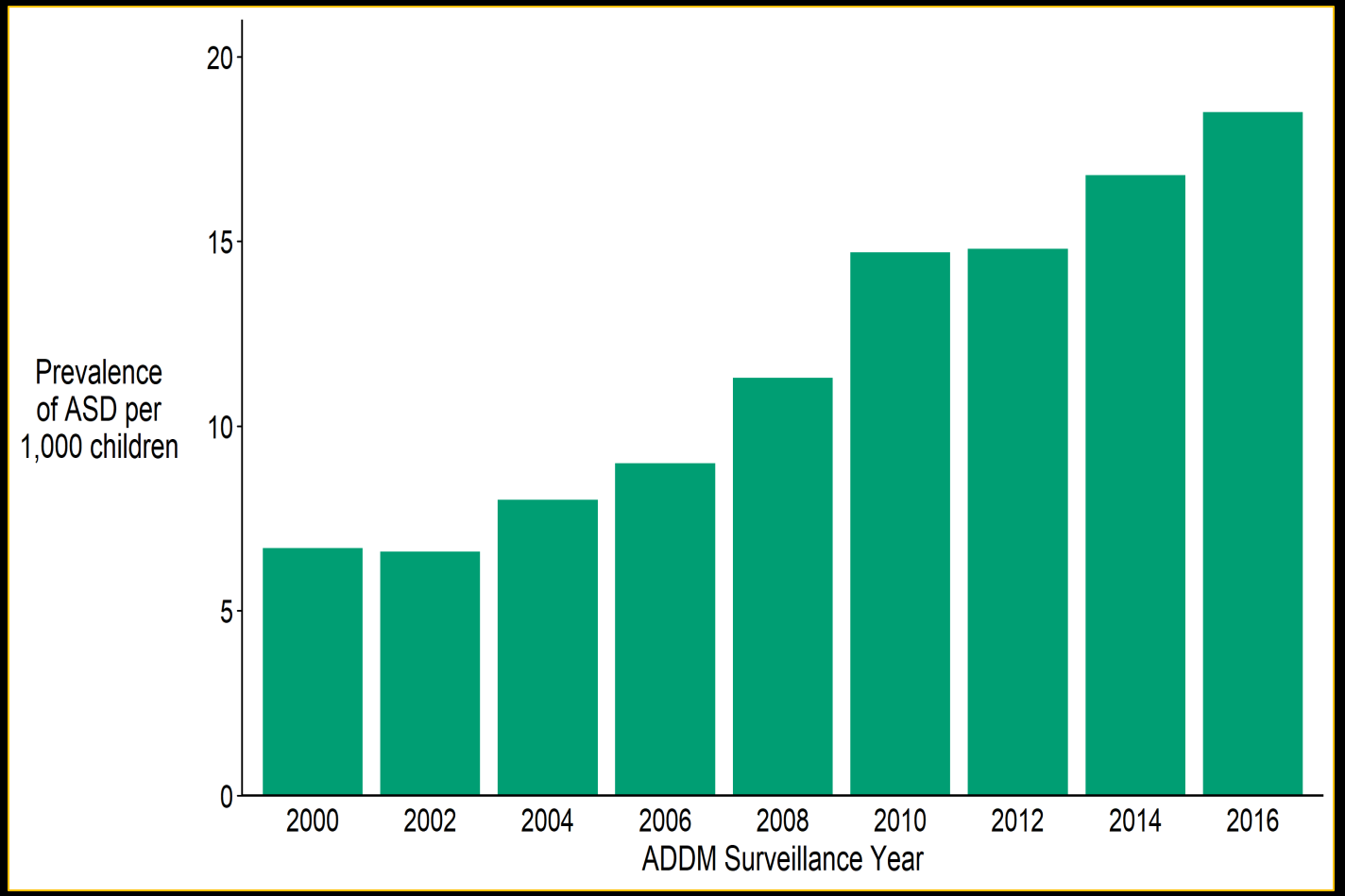
Center for the Health Assessment of Mothers and Children of Salinas

* brain development/ neurodevelopmental problems and organophosphate pesticides (chlorpyrifos)

https://cerch.berkeley.edu/research-programs/chamacos-study

AAP: 1 in 6 children has developmental disability



https://www.cdc.gov/ncbddd/autism/data.html

Autism Spectrum Disorders

AAP: *"urgent public health concern"*

www.cdc.gov/media/releases/2020/p0326-autism-prevalence-rises.html

Identified Prevalence of Autism Spectrum Disorder

ADDM Network 2000 – 2012
Combing Data from All Sites

Surveillance Year	Birth Year	Number of ADDM Sites Reporting	Prevalence per 1,000 Children (Range)	This is about 1 in X children...
2000	1992	6	6.7 (4.5 – 9.9)	1 in 150
2002	1994	14	6.6 (3.3 – 10.6)	1 in 150
2004	1996	8	8.0 (4.6 – 9.8)	1 in 125
2006	1998	11	9.0 (4.2 – 12.1)	1 in 110
2008	2000	14	11.3 (4.8 – 21.2)	1 in 88
2010	2002	11	14.7 (5.7 – 21.9)	1 in 68
2012	2004	11	14.6 (8.2 – 24.6)	1 in 68

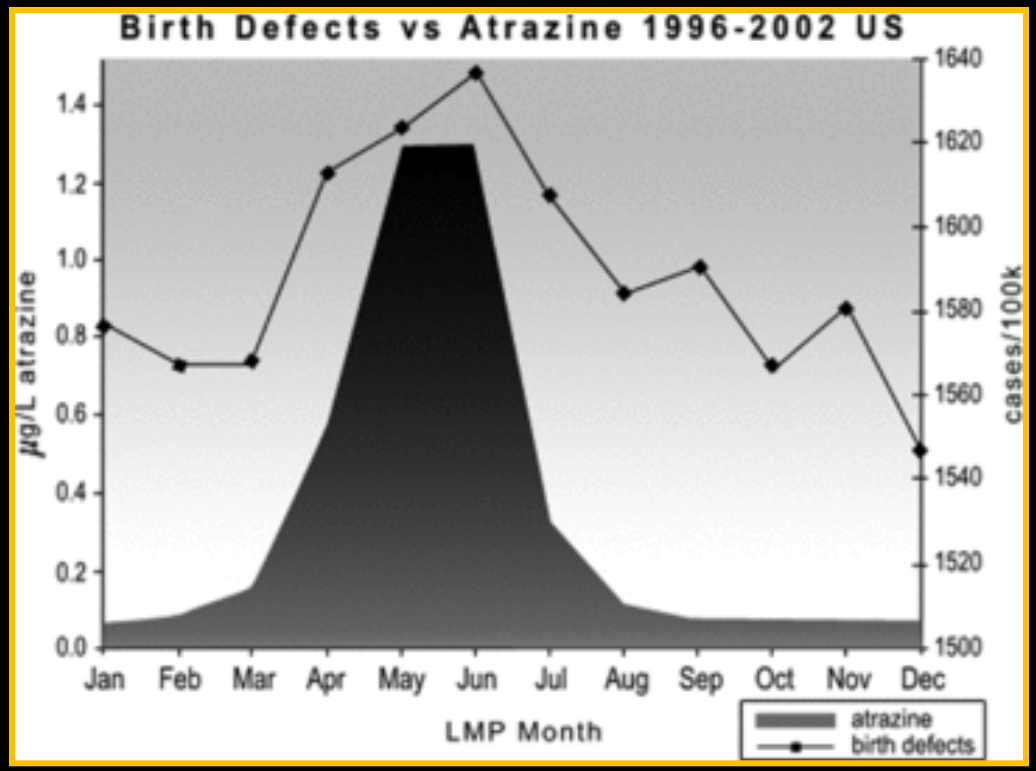
2016

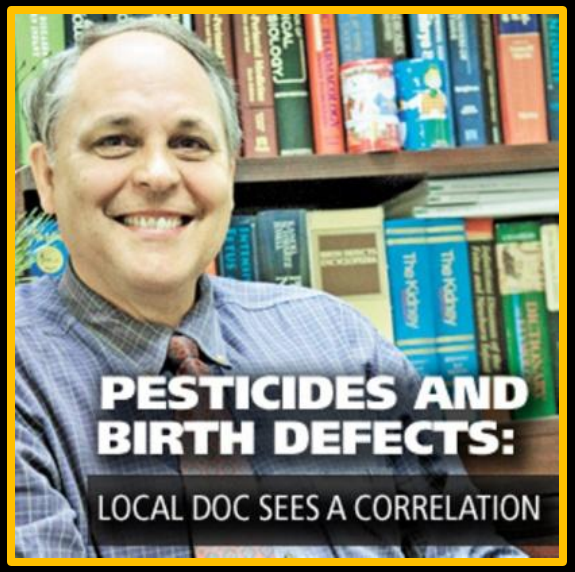
1 in 54

- Lead
- Methylmercury
- Polychlorinated biphenyls
- Organophosphate pesticides
- Organochlorine pesticides
- Endocrine disruptors
- Automotive exhaust
- Polycyclic aromatic hydrocarbons
- Brominated flame retardants
- Perfluorinated compounds

Landrigan P, et. al. A Research Strategy to Discover the Environmental Causes of Autism and Neurodevelopmental Disabilities. http://dx.doi.org/10.1289/ehp.1104285 April 2012

Agrichemicals in surface water & birth defects in the U.S.

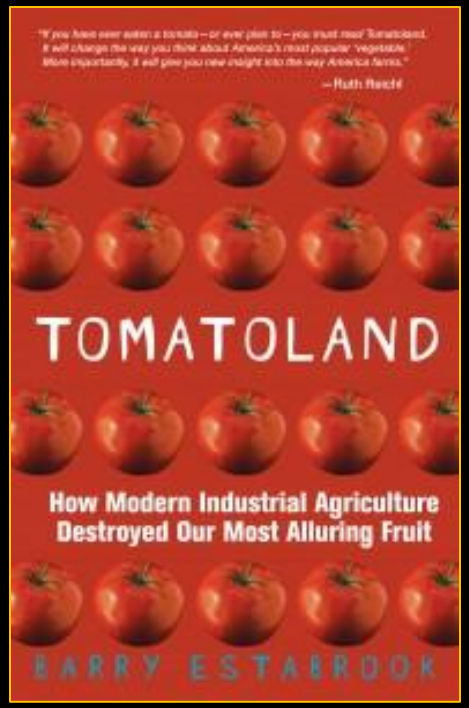




Birth defects ↑st among women conceiving in spring/ summer, when pesticides in surface water are ↑st.

Acta Pædiatrica, Vol. 98, Issue 4, 22 Jan 2009

Carlitos: Chemical Warfare and horrific birth defects linked to tomato pesticides Barry Estabrook



https://theecologist.org/2011/sep/01/chemical-warfare-horrific-birth-defects-linked-tomato-pesticides

Benefits of Organic Diets

- ↓ exposure to pesticide residues.
- Children consuming conventional diets had pesticide residues 6X higher in urine compared to organic diets.

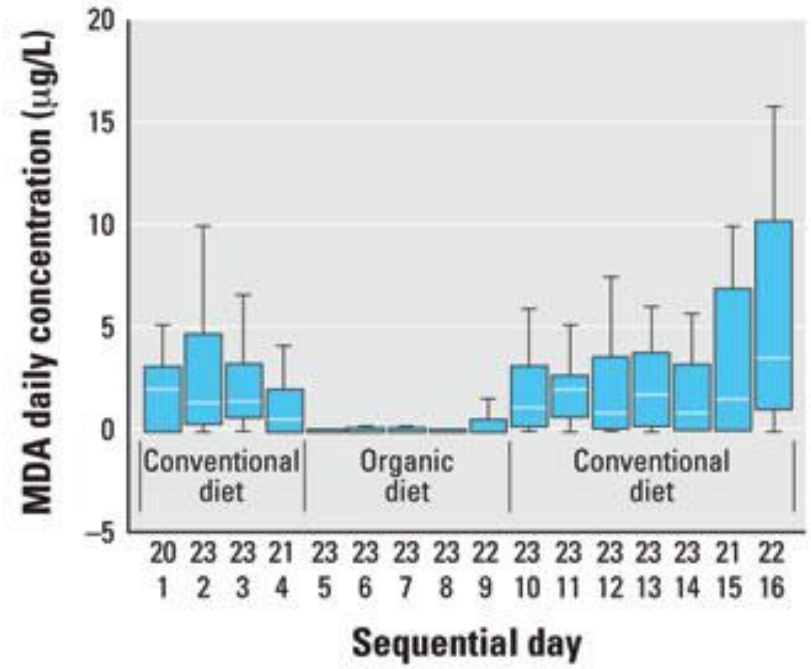
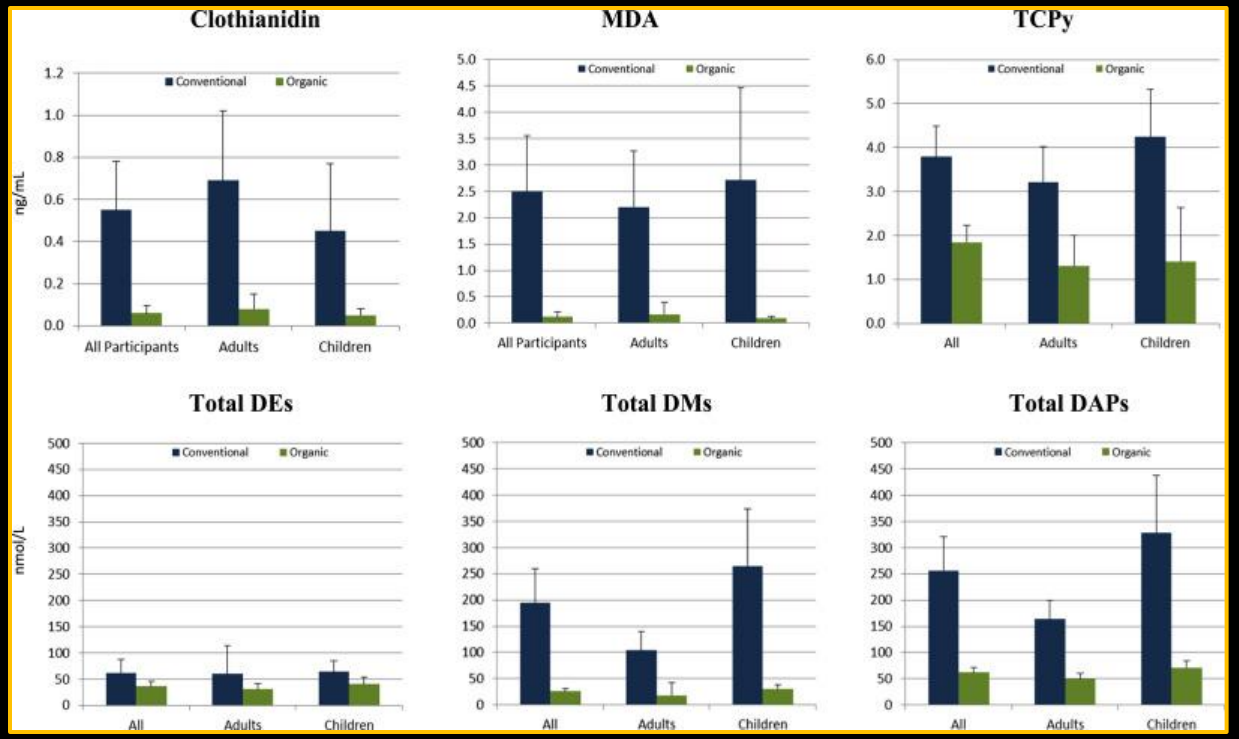


Figure 1. Box plots of DVWA of MDA concentrations in 23 children 3–11 years of age for 15 consecutive days in which conventional and organic diets were consumed. The top row of numbers on the *x*-axis represents numbers of children.

"Organic Diets Significantly Lower Children's Dietary Exposure to Organophosphorus Pesticides." Lu c., et. al., Environmental Health Perspectives 2006; 114:260-263.

Organic diet significantly reduces urinary pesticide levels in U.S. children and adults

- N=16
- Diet is a primary source of pesticide exposure.
- Organic diet reduced neonicotinoid, OP, pyrethroid, 2,4-D exposure in 4 U.S. families.
- •Greatest reduction observed: malathion, clothianidin, and chlorpyrifos.

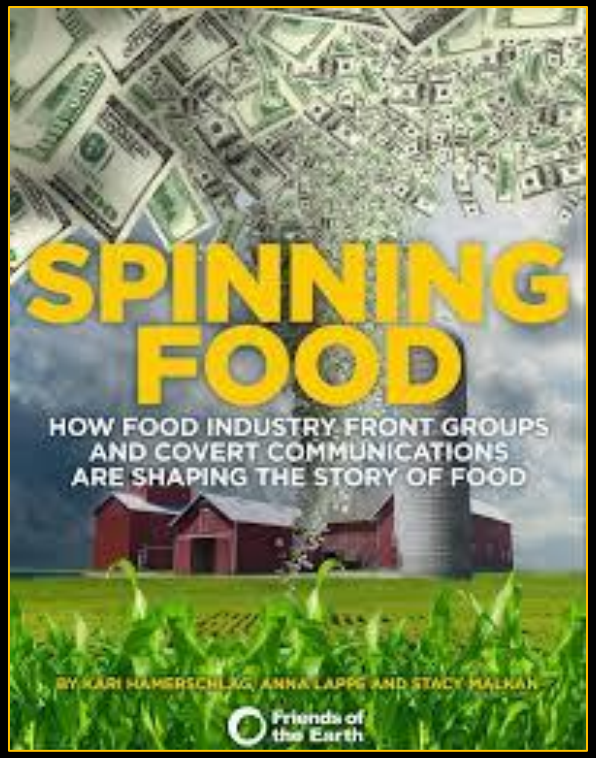


https://doi.org/10.1016/j.envres.2019.01.024

https://www.sciencedirect.com/science/article/pii/S0013935120307933?via%3Dihub

Food System-Media Literacy

Questions about pesticides and food?
We have answers.



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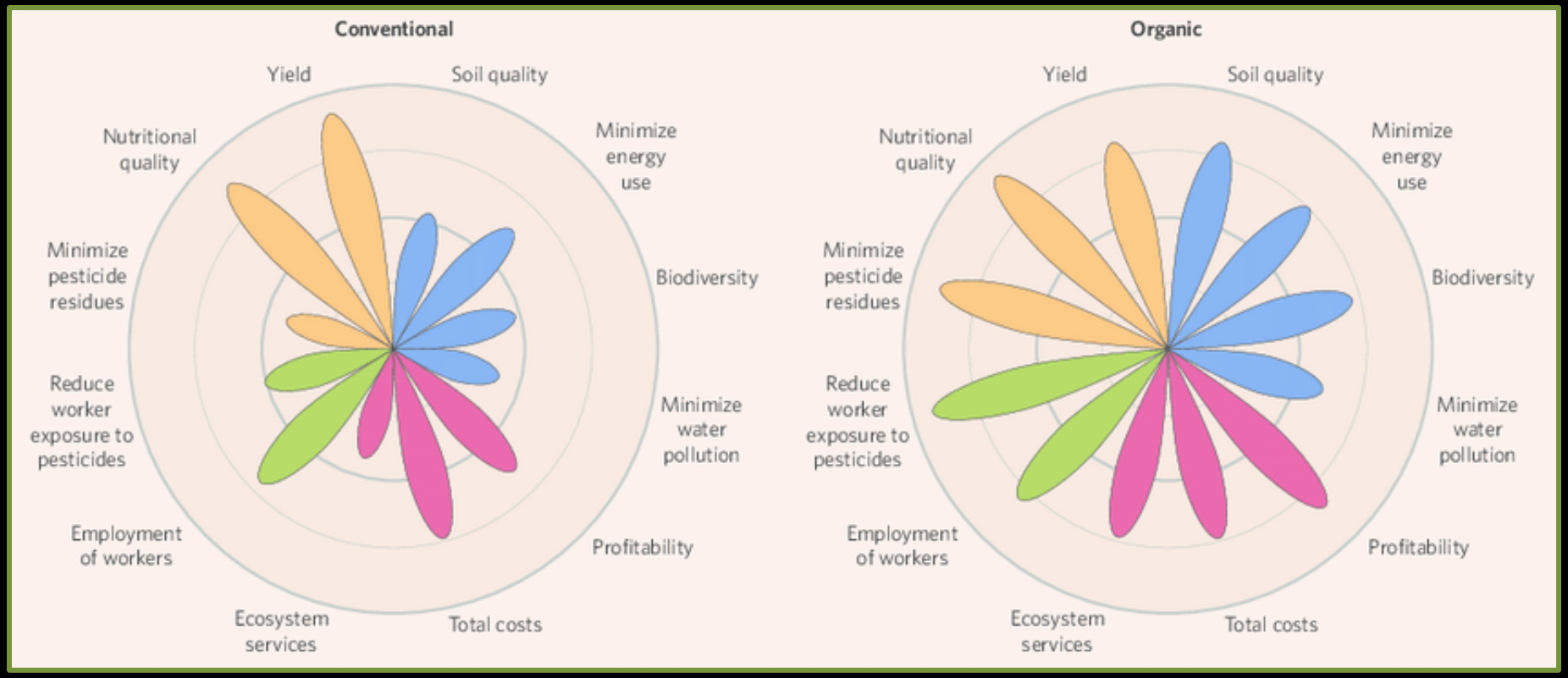
Organic Can Feed the World

--U.N.'s Environment Program; FAO

**Better water infiltration, retention and delivery to plants helps to sustain yield during drought.*

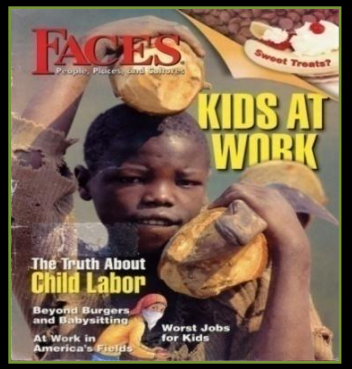
* Rodale Institute's Farming Systems Trial®

Conventional vs. Organic
4 major areas of sustainability:
Production; Environment; Economics & Well-being



Reganold, J., Wachter, J. Organic agriculture in the twenty-first century. *Nature Plants* **2,** 15221 (2016). https://doi.org/10.1038/nplants.2015.221

* Where does my food come from?
* Who produced/processed it?
* Under what conditions?
* What's IN/ON it? (or not)



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What are the unintended consequences of my food (farming) *choices*?

- Water
- Air quality
- Pollinators

- Soil
- Biodiversity
- Climate Δ

- Antibiotics

- Farmer/ Family health

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"Everything that happens in our environment happens to us, even if we don't know it yet."

Celine Cousteau

American Public Health Association
Philadelphia, 11/09

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Key Resources

- Beyond Pesticides: www.beyondpesticides.org ; Pesticide Induced Diseases Database
- Center for Biological Diversity: https://www.biologicaldiversity.org/
- Consumer Reports: Stop Eating Pesticides: https://www.consumerreports.org/pesticides-in-food/stop-eating-pesticides/

- Environmental Health News: https://www.ehn.org/toxic-chemicals-coronavirus-2645713170.html

- Food Print: Glyphosate residues and safety https://foodprint.org/blog/glyphosate-residue-in-food/?utm_source=mailchimp&utm_medium=email&utm_campaign=glyphosate_aug
  Food Print Food Label Guide: https://foodprint.org/eating-sustainably/food-label-guide/
- Food Print: What Organic Means: https://foodprint.org/issues/organic-agriculture

- Glyphhosate, IARC report: probable carcinoen: https://www.iarc.fr/wp-content/uploads/2018/07/MonographVolume112-1.pdf
- No scientific consensus on GMO safety. *Environ Sci Eur* **27,** 4 (2015). https://doi.org/10.1186/s12302-014-0034-1
- Midwest Center for Investigative Reporting: https://investigatemidwest.org/2020/08/26/new-pesticide-regulations-would-fix-broken-and-outdated-system-at-the-epa-sponsors-say/
- The Organic Center: https://www.organic-center.org/what-organic
- **Organic diet intervention significantly reduces urinary glyphosate levels in U.S. children and adults**
- https://doi.org/10.1016/j.envres.2020.109898
- Organic diet intervention significantly reduces urinary pesticide levels in U.S. children and adults
  https://doi.org/10.1016/j.envres.2019.01.024
  Organic agriculture to feed the world:
  www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/MullerEtAl_NatureCommunications2017.pdf
  Organic transition: https://www.sare.org/wp-content/uploads/Transitioning-to-Organic-Production.pdf

- Pesticide Action Network: https://whatsonmyfood.com/
- President's Cancer Panel Report on Reducing Environmental Cancer Risk:
  https://deainfo.nci.nih.gov/advisory/pcp/annualreports/pcp08-09rpt/pcp_report_08-09_508.pdf
- Rodale Institute research webinars: https://rodaleinstitute.org/education/webinars/archive/
  Rodale Farming Systems Trial:

- USDA Organic Standards: https://www.ams.usda.gov/rules-regulations/organic
  www.ams.usda.gov/organic/

Thank you for joining us today.

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