

First Do No Harm: What Healthcare Providers Need to Know about Organic Food & Agriculture

Webinar Questions Answered by Melinda Hemmelgarn, MS, RD

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- How do you recommend RDs interested in working the food sustainability field find opportunities to do so?

Answer: I suggest looking into organizations that focus on food and agriculture sustainability. There are many non profits that provide timely newsletters, webinars, and job opportunities. For example, the National Sustainable Agriculture Coalition; National Farm to School Network; Health Care Without Harm; and of course the Hunger and Environmental Nutrition Practice Group (HEN) within the Academy of Nutrition and Dietetics. www.hendpg.org This DPG can help you connect with other RDs who work in the field. Also, be sure to see the Sept. 2020 issue of JAND which includes the Revised Standards of Professional Performance for RDNs in Sustainable, Resilient, and Healthy Food and Water Systems. [https://jandonline.org/article/S2212-2672\(20\)30459-7/fulltext](https://jandonline.org/article/S2212-2672(20)30459-7/fulltext)

- How would you recommend dietitians approach farmers whether it comes to sitting 1:1 with them or touring their farms?

Answer: Many states and regions have their own organic and sustainable farming organizations. I advise RDs to attend and participate in these meetings, and now because of COVID, many of these meetings are virtual, so geographical location won't be a barrier to interacting with these farmers. For example, check out these organizations: the Northeast Organic Farming Association; Maine Organic Farmers and Gardeners Association; Ohio Ecological Food and Farm Association; Georgia Organics; the Midwest Organic and Sustainable Education Service; Eco-Farm; Real Organic Project; Rodale, etc. By attending these meetings and webinars, dietitians are provided an opportunity to meet farmers (and organic researchers), and develop relationships. Visit local and regional farmers' markets and get to know your local farmers; many will offer an open invitation to visit their farms. CSAs also require time on the farm working and developing farmer-consumer partnerships.

- How does regenerative farming compare to USDA organic farming?

Answer: Organic farming has a clear, legal definition, backed by a regulatory system. "Regenerative" farming, on the other hand, can have different meanings, depending on who is using the term. (Beware of greenwashing.) The Rodale Institute spearheaded development of the *Regenerative Organic Certification program*. According to Jeff Moyer, executive director of the Rodale Institute, organic is a prerequisite for being considered regenerative. But each farmer or company or brand who uses the term needs to fully define what it means to them because there is no "one" legal definition of "regenerative."

- I am seeing impacts on gut sensitivity/disruption with GMOs. Any thoughts or data for humans?

Answer: I think we need more long term, publicly funded research studies in this area. I'm most concerned about the herbicide glyphosate (Round Up) used with GMO crops (corn, soy, canola, cotton, sugar beets, alfalfa), and its impact on gut microbiota.

See: <https://pubmed.ncbi.nlm.nih.gov/31442459/>

And: <https://www.sciencedaily.com/releases/2020/11/201120095858.htm>

Fellow Registered Dietitian, Lori Taylor, MA, MS, RD, wrote an excellent review for the DIFM practice group on the topic in 2014.:

“Exploring the Case Against GE Foods.” <http://integrativerd.org/wp-content/uploads/2012/04/2014-DIFM-Spring-Newsletter-E-version-FINAL.pdf>

- Have GMO crops increased in past decade – ish?
Answer: Yes. See: <https://www.ers.usda.gov/data-products/adoption-of-genetically-engineered-crops-in-the-us/recent-trends-in-ge-adoption.aspx>
Along with the increase in GE crops, there has been an increase in the herbicides used on them due to weeds developing resistance.
See: <https://enveurope.springeropen.com/articles/10.1186/2190-4715-24-24>
Also: <https://thecounter.org/glyphosate-roundup-bayer-monsanto-reliance-increase-midwest-pesticide-resistance/>
<https://www.forbes.com/sites/bethhoffman/2013/07/02/gmo-crops-mean-more-herbicide-not-less/?sh=63e3c873cd53>
- Is there a possible benefit to genetic engineering that can make crops better suited for organic farming methods?
Answer: I am not aware of any research on this. But...genetic engineering is not allowed in organic farming. Check out the Rodale Institute - a terrific resource, with free webinars on organic farming research. Andrew Smith, Ph.D., at Rodale might be able to help answer specific organic growing and technology questions: <https://rodaleinstitute.org/about/staff/>
Also, please see the “GMO Yes or NO” resource (pdf) I provided to Orgain for a critical assessment of each application of genetic engineering.
- Purchasing organic foods can be cost prohibitive for many, how do we make organic fruits, vegetables, grains, dairy, and meats more accessible to lower income individuals?
Answer: This is an important, extremely complex, yet commonly asked question. What we are really talking about is the injustice of income disparity and the impact of poverty. We might start by asking *why* are people poor? Why can't they afford or access high quality food? For example: are they unable to earn adequate wages and benefits? Do they lack affordable housing? Have they lost economic security due to illness and health care expenses? Economic impact of Covid? Have safety nets been provided?

Changing agricultural policies that subsidize highly processed foods, keeping them “cheap” at the check-out but extremely expensive in terms of long term health care costs (externalities passed on to tax-payers) must be part of this conversation. The good news is these conversations are taking place. For example here's a good opinion piece in a recent NY Times: <https://www.nytimes.com/2020/12/08/opinion/covid-pandemic-food-crisis.html> .

Suggestions to make healthful foods more affordable include:

- * Plant a home garden, or participate in community gardens - not *certified* organic, but pesticide-free vegetables.
- * Eliminate the “middleman” and buy directly from farmers through local or regional markets/ food hubs.
- * Cook more foods from scratch at home, assuming the client has cooking skills and equipment.

* Ask farmers if you can trade work or service (barter) for food.

* Buy store brands rather than name brands.

Here are some thoughts from Dave Chapman, VT organic farmer, and Executive Director of the Real Organic Project, which I featured in my webinar:

"This is one of the huge questions we face, and I think is not easily answered in a paragraph. For someone living in deep poverty, it is likely that they have no choice but to buy the cheapest food they can find. That is the essence of poverty, that people often cannot afford the basics of life. They are forced to make decisions that will lead to future negative outcomes, but they simply have no choice. Likewise they cannot afford decent housing or healthcare... . All of these things, food, housing, healthcare, are embedded in social/economic systems. Thus poor people have shorter life expectancies. The answer is not to reduce everyone's life expectancy in an effort to be fair. The answer is to ensure that lower-income people are offered the same benefits of our society as those with greater resources. Good food should not be a luxury item, nor should farmers become even poorer in order to grow it.

Somehow food has gotten a pass because it is seen as a "thing," a commodity, rather than as a complex source of health and pleasure. Can't we make the "thing" cheaper? The answer is yes, we CAN make it cheaper, and we know how to do that. We create a food production system that fails to pay small farm owners and virtually ALL farmworkers a living wage. Cheap food creates more poverty for those who are doing the work of growing it. Then we sell it in supermarkets where the workers are also paid substandard wages.

We create a food system that gives livestock short, unhappy, unhealthy lives in confinement as an agricultural commodity. ... We create a food system that rewards the industrial producers (with OUR tax dollars) for producing cheap, nutrition-poor food. ... We have the cheapest food in the history of the world and the most expensive healthcare system in the history of the world. And certainly not the healthiest population in the history of the world...."

Doug Crabtree, organic farmer/Vilicus Farm in Havre, MT, says:

"The cost of organic food is derived from processing, distribution, packaging, advertising and greed (margins) all of which are much higher for organic food products. It's not the farmer's "fault" that organic food costs more, rather its everything between us and the eaters. Some of these higher costs are attributable to economies of scale. So, one thing that everyone can do to lower the cost of organic food is to buy and eat more of it. As the volume and market share increase, costs will decrease."

"April Joy Farm in WA collects donations from CSA members, family and friends, matches the contributions with grant funds and the farm's own efforts and provides FREE organic produce to low income residents in the "food desert" of Fruit Valley, WA. Vilicus Farm, MT donates 1% of wheat and lentils, local processors donate cleaning, grinding, bagging and transport and together provide organic lentils and flour to food banks."

- Many people cannot afford to purchase organic foods. What is being done to reduce the prices of organic foods to make them more accessible to limited resource people?

Answer: please see above.

- How would recommend talking about organic to populations with compromised food security or reduced resources purchase organic products?

Answer: please see above.

- I have read that many organic farmers use organic pesticides. These pesticides are more easily washed away and usually must be applied more often throughout the season. I have also read

that organic pesticides may be worse for fish. Thoughts?

Answer: It would be helpful to know the source/reference for your comments, but this issue was addressed in the webinar. Organic standards require that organic farmers try alternative methods first. They focus on soil health and mechanical and biological methods first. Allowed pesticides can be found on the National List <https://www.ams.usda.gov/rules-regulations/organic/national-list> and the OMRI list <https://www.omri.org/omri-lists>. Allowable pesticides are more likely to break down quickly and be less persistent in the environment. Organic farming methods are by design intended to protect and enhance the ecosystem. The National Organic Program as well as the Rodale Institute are resources for more specifics.

- How does pasture access increase the nutritional quality from a cow?

Answer: The nutritional composition of grasses/forages (high ALA), plus the cows' digestion (microbes and pH in rumen) and metabolism of the feed influence the fatty acid composition of milk and meat.

See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6723057/>
and: <https://onlinelibrary.wiley.com/doi/full/10.1002/fsn3.610>

- Can you discuss what types of non-synthetic pesticides are used in organic farming?

Answer: In addition to the National List and OMRI (mentioned in my presentation), this is a good review: <https://www.agdaily.com/technology/the-list-of-pesticides-approved-for-organic-production/>

- If an animal gets sick and needs antibiotics, how does the farmer handle that situation?

Answer: A sick animal raised on an organic farm that needs antibiotics, is indeed treated with them, *but* the treated animal must be removed from the organic herd. Milk and meat from the treated animal *cannot* be sold as organic/ *cannot* enter the *organic* food supply. See the USDA's NOP for specific details.

- How can consumers be assured that the NOP is being enforced by farmers?

Answer: By law, every organic farm is inspected annually by an independent inspector. See webinar slides for what the inspector will review on the organic farm, and records the organic farmer has to keep to pass inspection.

The Cornucopia Institute, Beyond Pesticides, and the Real Organic Project all work to maintain integrity among organic farmers.

- Can we avoid what is happening to India right now with pesticide poisoning?

Answer: I need more clarification on this question. But I'm assuming you are referring to this: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1762001/> Promoting food sovereignty, education and government support of organic and agroecological farming methods would reduce pesticide use/poisoning.

- I listened to one webinar that stated that organic foods grown next to farms that use pesticides, do not potentially produce true organic foods, and they can in fact contain some pesticides, etc. with some of these foods containing significant amounts. Can you comment on this?

Answer: Pesticide (and GMO pollen) drift are tremendous burdens to organic farmers, like Dave Vetter in NE, who I mentioned in the webinar. Vetter cannot sell his grain into the organic grain market if it is contaminated. See:

<https://www.foodandwaterwatch.org/sites/default/files/GMO%20Contamination%20Farmers>

[%20IB%20March%202014_0.pdf](#)

Rob Faux in IA (the farmer with the melons and flowers) lost his pepper plants due to Dicamba drift. <http://www.panna.org/blog/im-living-dicamba-nightmare>

If and when pesticide residues appear on organic foods, it is often due to drift. See:

https://www.ams.usda.gov/sites/default/files/media/Pesticide%20Residue%20Testing_Org%20Produce_2010-11PilotStudy.pdf (see page 5 of the discussion).

- For farms to become certified organic, the process is costly. So, there are plenty of family farms that practices organic principles but are not USDA certified organic. How do you suggest we educate patients on this to advocate for these farms in an informed manner?

Answer: There are many farmers at my local market who are not certified but say they practice organic farming methods. However, without certification, the consumer has to trust that the farmer is telling the truth. (Personally, I've been lied to which is why I prefer to buy from certified organic farmers.) Without certification, it's up to the consumer to ask the farmer which pesticides and herbicides they use on their produce, and/or what kind of feed they provide their livestock. Some consumers don't feel comfortable asking these questions. Developing relationships with farmers is key to understanding their farming practices. Fellow dietitian, Jasia Steinmetz, wrote a handy guide book, "Eat Local: Simple Steps to Enjoy Real, Healthy and Affordable Food," which discusses strategies for shopping at local markets, including a series of questions to ask farmers about their practices:

<https://www.amazon.com/Eat-Local-Simple-Healthy-Affordable/dp/0963281453>

Please note that the cost to become certified is partly covered by USDA through state departments of agriculture "cost share" program. See: <https://www.fsa.usda.gov/programs-and-services/occsdp/index>

- I shop organics at my local Farmer's Market year-round. When I have asked farmers whether they grow organically, many of them say "yes"; however, they are not certified due to cost. How can the consumer help farmers be recognized as organic -- when truly they are?!

Answer: Please see above. The only way for the consumer to be sure that farmers are truly following USDA organic practices is for the farmer to become certified. Without certification, the consumer has to trust that the farmer is telling the truth. USDA's cost share program can help relieve the burden of cost.

- It seems like there is a lot of back and forth on GMO effects on human health; clearly there are environmental impacts, but can you review some of the information on human impacts? I get this question a lot from patients.

Answer: Fellow dietitian Lori Taylor wrote an excellent review on GMO effects on human health with many references: <http://integrativerd.org/wp-content/uploads/2012/04/2014-DIFM-Spring-Newsletter-E-version-FINAL.pdf>

Also please see my reference slide: No scientific consensus on GMO safety. *Environ Sci Eur* **27**, 4 (2015). <https://doi.org/10.1186/s12302-014-0034-1>

- Can you highlight peer reviewed research that shows organic foods are more beneficial to health than conventionally grown foods?

Answer: Please see the *multiple* references and links in the presentation, plus the reference slide. *The* issue, from my perspective, is *how* organic food is produced, and what inputs are *not* allowed (antibiotics, synthetic fertilizers and most synthetic pesticides, etc.). Agricultural

practices that are better for the environment are better for public health.

Below are a couple of studies from my presentation, plus this additional one:-

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5658984/>

<https://pubmed.ncbi.nlm.nih.gov/24968103/>

<https://hal.archives-ouvertes.fr/hal-00886513/document>

- Some places in Europe have outlawed pesticides by Montesano, do you see this as a possibility in the US?

Answer: Only with consumer, farmer, and political pressure.

Please join the *Beyond Pesticides* mailing list for updates on political actions:

<https://www.beyondpesticides.org/>

- Are GMO foods really that bad? As RDNs, we are consistently bombarded with messaging to side with/promote either GMO or non-GMO foods. In many nutritional settings, including public health, wouldn't the general promotion of fruits and vegetables be more beneficial?

Answer: Most fruits and vegetables are NOT genetically engineered (GMO). Most GMO crops are commodity crops: corn, soy, canola, cotton, and sugar beets. These are genetically engineered to be resistant to glyphosate ("Round Up Ready"), an herbicide that has been deemed a probable human carcinogen by the IARC.

See my reference list: Glyphosate, IARC report: probable carcinogen: <https://www.iarc.fr/wp-content/uploads/2018/07/MonographVolume112-1.pdf>

As weeds have become resistant to this herbicide, additional herbicides are being sprayed, the drift from which are killing fruit and vegetable crops. See webinar slides referencing the Bader peach farm losses. Also: <http://www.panna.org/blog/im-living-dicamba-nightmare>

Granted, we want the public to be eating more fruits and vegetables for better health. But *given a choice*, I want to eat produce that hasn't been sprayed with pesticides --not just for my own family's benefit, but for the benefit of the environment and farm worker health.

Here are two good references re the safety of GMO foods:

Lori Taylor, M.A., M.S., R.D., wrote an excellent review for the DIFM newsletter:

<http://integrativerd.org/wp-content/uploads/2012/04/2014-DIFM-Spring-Newsletter-E-version-FINAL.pdf>

Also please see my reference slide: No scientific consensus on GMO safety. *Environ Sci Eur* **27**, 4 (2015). <https://doi.org/10.1186/s12302-014-0034-1>

- What can you say about the reliability of the organic label when there are so many exposing about how organic producers aren't actually doing what they're supposed to be doing?

https://www.washingtonpost.com/business/economy/why-your-organic-milk-may-not-be-organic/2017/05/01/708ce5bc-ed76-11e6-9662-6eedf1627882_story.html

Answer: As I mentioned in my presentation, there will always be "cheaters" in any system, but there are growing numbers of organic farmers and conscientious eaters working to protect the integrity of the label and preserve and expand "real organic." (See the Real Organic Project and speakers at their annual Symposia). Even though the organic seal has legal definitions and oversight, plus annual independent on-farm inspections, we have to be vigilant and play an active role in keeping the integrity in the organic label. I appreciate journalists and watchdog organizations that help hold organic farming operations accountable. If you'd like more information about how we can help keep integrity in the organic label, please sign up for the

Beyond Pesticides updates. One of the organization's missions is to keep integrity in the organic label.

<https://www.beyondpesticides.org/programs/organic-agriculture/keeping-organic-strong-2020>

Also, check out the Cornucopia Institute <https://www.cornucopia.org/> and the Real Organic Project <https://www.realorganicproject.org/> -- all work to maintain integrity of the organic label.

- I live in an area where apples and cherries are grown. I can find organic apples occasionally but not organic cherries. I am wondering why. Is it harder to grow organic fruit trees than other crops?
Answer: Organic fruit will become more available with increasing consumer demand. Be sure to ask the grocery store manager to carry it. And talk to regional growers. It IS more time-consuming and labor intensive to grow organic fruit, but many farmers successfully do so. In regions with high heat and humidity, fungal diseases are more of a challenge. That said, I live in MO where the summers are super hot and humid. But I planted a cherry tree in my backyard about 20 years ago, simply because I wanted access to fresh tart cherries that had not been sprayed. This ONE tree has provided enough cherries for at least 4 good sized cherry pies each year! I realize not everyone can do this, but if you can, consider planting/ landscaping with fruit trees of your own, or look into the possibility of planting fruit trees in parks and at schools in your community.
- I am concerned about organic foods that enter the supermarket/grocery store in good condition and then are subjected to what is sprayed into the air or cleaned with in the store. Air fresheners, fly sprays etc. How do consumers buy real organic in a grocery store?
Answer: If you can, purchase organic or pesticide-free produce fresh, from local farmers at farmers' markets and CSAs (community supported agriculture). For supermarket/grocery store contamination, I would check with the store produce manager to inquire about how they specifically handle their organic produce and what cleaning products they use. Even if produce is organic it still should be washed/rinsed with cold water prior to eating.
- Is there proof the GMOs and BE are harmful?
Answer: Fellow Registered Dietitian, Lori Taylor, M.A., M.S., R.D., wrote an excellent review for the DIFM newsletter: <http://integrativerd.org/wp-content/uploads/2012/04/2014-DIFM-Spring-Newsletter-E-version-FINAL.pdf>
Also please see my reference slide: No scientific consensus on GMO safety. *Environ Sci Eur* **27**, 4 (2015). <https://doi.org/10.1186/s12302-014-0034-1>
- It was my understanding that the research on nutritional benefits of foods made with GMOs was inconclusive as some research found higher levels of nutrients and some research does not. input on this?
Answer: I'd like to see the research you are referring to, but I think that the bigger/ more important issue is growing practices and herbicide use. Each application of genetic engineering is different. But, the majority of GMO crops thus far (corn, cotton, canola, soybeans, sugar beets, alfalfa) are specifically resistant to spraying with glyphosate, and more recently 2,4-D and dicamba on GMO soy, cotton and corn. These herbicides pose environmental harm/health risks, and drift from dicamba has been damaging non-resistant but highly nutritious crops such as fruits and vegetables. See webinar slides referencing the Bader peach farm losses. Also:

<http://www.panna.org/blog/im-living-dicamba-nightmare>

- Please provide a link to the "ten questions" resource that you mentioned?

Answer: I provided this document to Orgain. It's a pdf.

- Please share any evidence of studies of non-organic and the high incidence of problems of infertility in men and women nowadays?

Answer: I have not investigated this issue, specifically, but endocrine disruptors in general, including some pesticides, can impair fertility.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3138025/>

- When speaking to clients about organic items/produce, how do we make sure to speak the facts without instilling fear in our clients, especially in those who may not be able to afford organic items?

Answer: I try to focus on finding ways for all people to incorporate more pesticide-free produce into their diets. Home and community gardens, for example.

- Why is organic not recommended for children and diseases? Are there not enough high-quality studies on organic farming?

Answer: I think we do have enough evidence to recommend organic diets especially for vulnerable populations such as children, pregnant women. Please see my reference list slide for additional supportive information to share with other health care providers. I think there is a lack of awareness; we need more education.

- Do you think avoiding the dirty dozen is a good place to start when getting people to prioritize certain organic foods over others?

Answer: The Environmental Working Group's "Dirty Dozen" can be a helpful guide. I also like the Pesticide Action Network's What's On My Food: <https://www.whatsonmyfood.org/> and Consumers Union recent report on pesticides listed in my reference slide:

Stop Eating Pesticides: <https://www.consumerreports.org/pesticides-in-food/stop-eating-pesticides/>

- Is it true that the amounts of pesticides that are found to be toxic in our bodies are a far greater amount than we will ever consume in conventional, non-organic products?

Answer: The amounts of pesticides in our environment, our water, food and air, and therefore our bodies are a concern, especially for vulnerable populations – children, pregnant women, and women of child-bearing age. Please see the reference list slide for more information, and also this video from Dr. Bruce Lanphear at Simon Fraser University, titled "Little Things Matter:"

<https://www.youtube.com/watch?v=E6KoMAbz1Bw>

Lanphear explains how even very small amounts (ppm/ppb) can be biologically active, and the synergistic combinations of toxins is rarely studied.

- I am confused about "natural pesticides" and the use of sulfur compounds on organic food. No one talks about what is used on organic plants to control the destruction of crops. Thoughts?

Answer: please see: <https://www.agdaily.com/technology/the-list-of-pesticides-approved-for-organic-production/> for a list of pesticides that are allowed for use on organic crops, but remember, organic farmers use alternative methods first (mechanical, biological) for pest

control.

- Can you share more information about why to filter tap and well water?

Answer: Please see the President's Cancer Panel Report:

https://deainfo.nci.nih.gov/advisory/pcp/annualreports/pcp08-09rpt/pcp_report_08-09_508.pdf Personally, I installed a 10-stage carbon filter under my kitchen sink, because of this report.

- What can be done to lobby the government to change ALL agricultural farming to go organic?

Answer: It's helpful to voice our professional concerns to our Representatives and Senators (state and national), and join with non-profit organizations that lobby to promote more support for organic agriculture such as the Organic Farming Research Foundation <https://ofrf.org/>, Beyond Pesticides <https://www.beyondpesticides.org/>, and the National Organic Coalition <https://www.nationalorganiccoalition.org/>. All of these organizations can send policy updates and action alerts, letting you know about important issues. The fact that we have so much money in politics truly hinders public health efforts. Campaign finance reform work is critical for this reason as well.

- Why is organic more expensive when less materials go into producing them?

Answer: Organic farming is more time and labor intensive – organic farmers have extensive paper work and record keeping, plus they have to pay for inspection/certification, although some of this burden is offset by USDA's cost share program. See the discussion above about organic food costs and the comments from Doug Crabtree, organic farmer in Havre, MT.

- Are there any links between neurological disorders in children and the father being exposed to large amount of farm chemicals? For example, a father worked on a farm and was commonly sprayed with organophosphates and all children have ADHD and other neurological conditions. Mother was not exposed.

Answer: This is such a sad case, but not uncommon. There is a lot of data on neurological harm from pesticide exposure. *Beyond Pesticides* has a Pesticide Induced Disease Database:

<https://beyondpesticides.org/dailynewsblog/2020/12/chemicals-to-avoid-groundbreaking-database-of-illnesses-from-pesticide-exposure-launched/>

Also, see: <https://www.publichealth.columbia.edu/research/columbia-center-childrens-environmental-health/neurodevelopment>

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

Sperm can be affected by the father's exposure, but keep in mind that the mother could have been exposed from contact with the father's laundry/clothes, plus drift, dust and dirt brought into the home. Water quality in farming communities can also be compromised by pesticides and nitrates.

- Is there anything being done to promote organic food consumption in school foodservice?

Answer: I can't name any specific schools, but please check out the National Farm to School Network, which might have some resources on this topic. <http://www.farmtoschool.org/>; also

the Chef Ann Foundation: <https://www.chefannfoundation.org/who-we-are>

And ASAP: <https://growing-minds.org/>

- What do you say to those who defend conventional farming by saying, "The dose is the poison"? That reported residue levels of conventional pesticides and herbicides are so low they

pose little/no harm to a person's health. And even organic approved pesticides and herbicides can pose threat to someone's health in large enough amounts.

Answer: The "dose makes the poison" is an outdated way of thinking about toxicology. For *some* toxins (example, alcohol), the dose does make the poison, but that is not the case for others. Endocrine disruptors, for example, may actually be more biologically active at lower doses. <https://www.efsa.europa.eu/sites/default/files/event/documentset/120614l-p07.pdf>

See Dr. Bruce Lanphear's Little Things Matter video:

<https://www.youtube.com/watch?v=E6KoMABz1Bw>

Re pesticide use in organic farming systems, remember that residues are less and alternative methods of pest control are used first.

- Could we please get the information on the study relating to the graph shown pertaining to the children placed on an organic diet, and then placed back on a conventional diet?

Answer: The reference is included on the webinar slide; this is the work of Dr. Lu at Harvard:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1367841/>

- The FDA toxicology report shows little pesticide residue in conventional or organic produce. What is your opinion.

Answer: I don't know which FDA toxicology report you are referring to, but I'm concerned about even small amounts of pesticide residues on my food, as well as pesticide exposure on farm workers, and impact on our environment. The Pesticide Action Network has a good resource on pesticide residues: <https://www.whatsonmyfood.org/>

I like this recent article from Consumers' Union as well:

<https://www.consumerreports.org/pesticides-in-food/stop-eating-pesticides/>

And this from USDA:

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

And remember, multiple pesticide residues can have synergistic actions; and, parts per billion/parts per million can be biologically active.

See Little Things Matter: <https://www.youtube.com/watch?v=E6KoMABz1Bw>