



What's So Great About Organic Food?

Looking for a quick way to feel lousy about yourself? Then forget the idea of a healthy diet and just eat what your body wants you to eat. Your body wants meat; your body wants fat; your body wants salt and sugar. Your body will put up with fruits and vegetables if it must, but only after all the meat, fat, salt and sugar are gone. And as for the question of where your food comes from — whether it's locally grown, sustainably raised, grass-fed, free range or pesticide-free? Your body doesn't give a hoot.

But you and your body aren't the only ones with a stake in this game. Your doctor has opinions about what you should eat. So does your family. And so too do the food purists who lately seem to be everywhere, insisting that everything that crosses your lips be raised and harvested and brought to market in just the right way. If you find this tiresome — even intrusive — you're not alone. "It's food, man. It's identity," says James McWilliams, a professor of environmental history at

Texas State University. "We encourage people to eat sensibly and virtuously, and then we set this incredibly high bar for how they do it."

The ideal — as we're reminded and reminded and reminded — is to go organic, to trade processed foods for fresh foods and the supermarket for the farmers' market. Organic foods of all kinds currently represent only about 3% of the total American market, according to the most recent numbers from the U.S. Department of Agriculture (USDA), but it's a sector we all should be supporting more.

That sounds like a great idea, but we'll pay a price for it. Organic fruits and vegetables cost 13¢ to 36¢ per lb. more than ordinary produce, though prices fluctuate depending on the particular food and region of the country. Milk certified as hormone- and antibiotic-free costs \$6 per gal. on average, compared with \$3.50 for ordinary grocery-store milk.

What's more, while grass-fed beef is lower in fat, and milk without chemicals is clearly a good idea,

it's less obvious that organic fruits and vegetables have a nutritional edge to speak of. A 2009 study in the *American Journal of Clinical Nutrition* led to a firestorm in the food world. It found no difference between organic and conventional produce with regard to all but three of the vitamins and other food components studied, and conventional produce actually squeaked past organic for one of those three.

"We draw these bright lines between organic and conventional food," says McWilliams. "But science doesn't draw those lines. They crisscross, and you have people on both sides of the argument cherry-picking their data." For consumers trying to stay healthy and feed their families — and do both on budgets that have become tighter than ever — the ideological back-and-forth does no good at all. What's needed are not arguments but answers.

The Wages of Eating

The biggest reason not to ignore the food purists is that in a lot of ways they're right. Our diet is indeed killing us, and it's killing the planet too. Earlier this month, the Centers for Disease Control and Prevention in Atlanta released a study revealing that nearly 27% of Americans are now considered obese (that is, more than 20% above their ideal weight), and in nine states, the obesity rate tops 30%. We eat way too much meat — up to 220 lb. per year for every man, woman and child in the U.S. — and only 14% of us consume our recommended five servings of fruits and vegetables per day. Our processed food is dense with salt and swimming in high-fructose corn syrup, two flavors we can't resist. Currently, enough food is manufactured in the U.S. for every American to consume 3,800 calories per day — we need only 2,350 in a healthy diet — and while some of that gets thrown away, most is gobbled up long before it can go stale on the shelves.

Keeping the food flowing — and the prices low enough for people to continue buying it — requires a lot of industrial-engineering tricks, and those have knock-on effects of their own. Up to 10 million tons of chemical fertilizer per year are poured onto fields to cultivate corn alone, for example, which has increased yields 23% from 1990 to 2009 but has led to toxic runoffs that are poisoning the beleaguered Gulf of Mexico. Beef raised in industrial conditions are dosed with antibiotics and growth-boosting hormones, leaving chemical residues in meat and milk. A multicenter study released just two days after the obesity report showed that American girls as young as 7 are entering puberty at double the rate they were in the late 1990s, perhaps as a result of the obesity epidemic but perhaps too as a result of the hormones in their environment — including their food. And for out-of-season foods to be available in all seasons as they now are, crops must be grown in one place and flown or trucked thousands of miles to market. That leaves an awfully big carbon footprint for the privilege of eating a plum in December.

The food wars are fought on multiple fronts, but it's the battle over meat that generates the most ferocious disagreement. Americans have always been unapologetic carnivores, which befits a nation that grew up chasing buffalo and raising cattle across endless stretches of open plains. But lately things have gotten out of hand. The U.S. produces a breathtaking 80 billion lb. of meat per year, with poultry alone making up 35 billion lb. It's now common knowledge that the animals are raised in mostly miserable conditions, jammed together on factory farms and filled with high-calorie, corn-based feed that fattens them up and moves them to slaughter as fast as possible. It can take up to two and a half years to raise a grass-fed cow, while a feedlot animal may face the knife after just 14 months.

The idea of animals living such short, brutish lives introduces an element of altruism into the organic-vs.-commercial debate over meat that isn't there for other foods. Just this month, Ohio Governor Ted Strickland brokered a truce between animal-rights activists and farmers in his state to improve the living conditions of hogs, veal calves and hens; that agreement followed similar reforms enacted in California in 2008.

"When you're raising something with a circulatory system and a nervous system, they deserve care,"

says Bev Eggleston, the owner of EcoFriendly Foods, a decidedly nonindustrial farm in Moneta, Va., that produces cattle, hogs, veal, lamb and poultry. Eggleston's animals live in fields and coops,

not feedlots and cages. The farm has a petting zoo, and the doors of the slaughterhouse are open to visitors so they can see the clean and as-humane-as-possible conditions in which the animals are killed. "I want to speak for the animals," Eggleston says. "When I pull a knife, I want them to know their gift is being received."

There are material advantages to that kind of humane treatment. Cattle that eat more grass have higher ratios of omega-3 fatty acids to omega-6s, a balance that's widely believed to reduce the risk of cancer, heart disease and arthritis and to improve cognitive function. Take the cows out of the pasture, put them in a feedlot and stuff them with corn-based feed, and the omega-3s plummet. "The levels are almost undetectable after three months," says Ken Jaffe, a former physician who now runs Slope Farms, an open-air cattle farm in the Catskill Mountains of New York. The big beef manufacturers concede that while the ratio for omega-6s to omega-3s is 1.5 to 1 for grass-fed cows, it leaps to 7 to 1 for those that are grain-fed. But industry reps challenge the significance of those numbers. "The best ratio hasn't been determined yet in terms of nutritional balance," says Shalene McNeill, a registered dietitian working for the National Beef Cattlemen's Association, an industry group. "And it's important to remember that this is just one small part of a consumer's overall diet." Farm-raised animals are also higher in conjugated linoleic acids, fatty acids that, according to studies of lab animals, may help reduce the risk of various cancers. What's more, animals not raised on feedlots have less chance of spreading *E. coli* bacteria through contact with other animals' manure, though the industry insists it is making improvements, with better spacing of animals on the lots and better cleaning methods in slaughterhouses.

Hogs and chickens present fewer problems than cattle — at least in terms of chemicals — since government regulations prohibit farmers from using growth hormones on either animal. But antibiotics are still served up liberally, and that creates other dangers. Methicillin-resistant *Staphylococcus aureus* (MRSA), for example, an often deadly pathogen associated mostly with hospital-acquired infections, has been increasingly turning up in hog farmers, who contract it from their animals. In one study last year, a University of Iowa epidemiologist found that 49% of the hogs she tested were positive for MRSA, as were 45% of the humans who handled them.

Far more troubling — if only because the problem is far more widespread — is the recent recall of more than half a billion eggs from two producers due to salmonella contamination. Salmonella is hardly unheard of even among chickens raised in comfortable, free-range conditions. But when you confine half a dozen birds at a time in cages no larger than an opened broadsheet newspaper, and stack hundreds or thousands of those so-called battery cages together, you're going to spread the bacterium a lot faster. The egg manufacturers stress that thoroughly cooking eggs can kill salmonella — which is true as far as it goes. But treating chickens like conscious creatures instead of egg-manufacturing machinery can help avoid outbreaks in the first place.

Short of swearing off eggs and meat — a perfectly good choice, but with only 3% of Americans describing themselves as vegetarians, not likely for most people — there are no easy solutions. For one thing, if we all decided to switch to healthier, chemical-free meat, there wouldn't be remotely enough to go around. Only 3% of cattle in the U.S. are organically raised, and just 0.02% of hogs and 1.5% of poultry. What's more, that scarcity helps drive the already premium price higher still. Another alternative is to eat more fish, which is healthier anyway because it's leaner, lower in calories and higher in omega-3s. But with fish stocks collapsing worldwide because of rampant overconsumption, there's only so far that solution could take us. A half measure — but a very powerful one — is simply to cut back on whatever meat we do eat, even if we can't quit it altogether. This shouldn't be too hard: Americans already consume at least 1.5 times as much meat as the USDA recommends in its famed food pyramid. And with plenty of protein to be found in eggs, soy, cheese, grains, nuts, legumes and leafy green vegetables, there is no shortage of ways to compensate.

"You need to eat animals only to close the nutrient cycle," says Fred Kirschenmann, a distinguished fellow at the Leopold Center for Sustainable Agriculture at Iowa State University. "If we changed a few things about how we live, we'd have fewer animals in the system."

Cash Crops

When animal protein, whether organic or not, becomes a supporting player in the diet, then fruits, veggies and grains take the lead. That's generally a good thing, but here too there are complications. The back-to-the-land ideal of farming without the use of synthetic pesticides and other chemicals can take you only so far in a country with 309 million mouths to feed (not to mention a world with 6.8 billion). Say what you will about the environmental depredations of agribusiness, industrial farms coax up to twice as much food out of every acre of land as organic farms do. And even that full-tilt output may not be enough to keep up with a global population that's galloping ahead to a projected 9 billion by 2050.

"Only about 5% of the arable land on the planet remains unused," says McWilliams. "But we'll need

to increase food production by 50% to 100%." If we have to spray, fertilize and even genetically engineer our way there, that's something we may simply have to accept.

In the U.S., running out of crop foods is not a problem — at least not yet — but pesticide residues on fruits and vegetables cause people some perfectly reasonable worries. Properly washing or peeling produce can take care of most of the problem, but if you buy organic, you avoid the pesticide issue altogether, right? Not necessarily. It's not just that drift from nearby nonorganic farms can contaminate other crops in the vicinity; it's also that organic farmers use pesticides of their own. According to the Environmental Protection Agency, there are now 195 registered biopesticides — substances derived from animals, plants or minerals that are toxic to certain species — used in 780 commercial products. There is broad agreement that biopesticides are not as dangerous as commercial pesticides, but less toxic doesn't mean nontoxic, and even such lowerimpact

chemistry has a nasty habit of hanging around in soil and water longer than you want it to.

"Organic farming may represent only 2% of the total of all farming," says McWilliams, "but what if it became 20%? The chemicals are used only sparingly now, but they wouldn't be then."

Organic fertilizers are less of a problem, since they consist mostly of manure, as well as other relatively benign materials like peat, seaweed, saltpeter and compost. Humble as such substances are, however, they can become awfully pricey, because you need very big quantities to pack the same fertilizing punch as synthetic brands do. "It can take four tons of manure per acre to raise food," says McWilliams. "When you know that, a bag of synthetic fertilizer starts to look pretty good."

Wallet and Palate

But for most consumers — even those who think of themselves as environmentally conscious — the critical considerations in deciding to go organic involve the far more personal matters of price, flavor and nutrition. Last year's nutrient study had a lot of organic partisans wincing — and a lot of commercial growers feeling smug — but one paper is hardly the whole story. The real difference between organic and nonorganic produce is in the relative presence of micronutrients such as copper, iron and manganese, as well as folic acid, none of which were included in the study. With these, the results are mixed.

In a meta-analysis conducted by the Organic Center, a nonprofit group in Boulder, Colo., organic produce was found to be 25% higher in phenolic acids and antioxidants. "It's these components that are deficient in American diets, so that makes this finding especially significant," says Charles Benbrook, the group's chief scientist. But the organic label alone is not enough to ensure that all consumers get the same boost. "The real nutrient value in produce comes from the soil," says Kirschenmann. "So that's a mixed deal unless you know the farmer and know how he's managing his soil."

The farmer also plays the biggest role in determining the most subjective of all variables: taste. You can start a lot of arguments about whether organic crops actually have better, fresher, more complex flavors than industrial crops do, but without a double-blind taste test, there's no way to know. On a few points, most people agree: a freakishly large, overly engineered tomato or strawberry designed

to ripen en route to a distribution center will never come close to the taste of its vine-ripened, freshpicked

cousin. The Red Delicious apple is the poster fruit for what can go wrong when commercial growers manipulate their product too much. Bred and rebred for an ever redder skin and an ever more tapered shape, the apples became mealy, juiceless and all but unpalatable inside.

That, however, is not to say organic growers don't also try to prettify their produce before revealing it to the world. "Green markets can be a kind of food pornography," says Manny Howard, author of *My Empire of Dirt*, about his experiences with backyard farming. "You buy a big bushel of beet greens without a wormhole in it, and that's just not what farm food looks like."

There may be flavor to be found in lovely and unlovely food alike, and a lot of things have to go right to raise the best-tasting produce. It's not just the quality of the soil that's at work, says Kirschenmann. "Selecting the right variety of plant and using the right mix of compost are important too. With farm-to-table food, the farmers are in many ways the chefs, as opposed to, say, molecular gastronomy, in which so much happens in the kitchen."

The kitchen, of course, is the center of everything for families too, and this is where the shouting of the food partisans fades to babble. Eating an apple is almost always better than not eating an apple, no matter where it came from. And getting the whole brood into the habit of sitting down to a meal of lean meats, lots of veggies and judicious amounts of carbs and starches is hard enough without bringing politics into the mix. Farmers' markets are undeniably great — if you can afford them, if there's one near you and if you have time between the job and the kids to make a special trip when you know you can get everything in a single stop at the supermarket. The food industry undeniably churns out all manner of dangerous and addictive junk without a shred of real nutritional value in it, but there are also food companies that manage to get healthy, high-quality food to market and keep the cost of it reasonable.

The answer, ultimately, is for the two sets of producers — and their two sets of customers — to find a better way to co-exist. It's important to crack down on the industry's most egregious and polluting practices — to say nothing of its punishing treatment of animals — but we need to make sure the food still gets to the stores. It's important too to support the local-farming movement not only to make more fresh foods available to more consumers but also to boost a growing economic sector and perhaps bring down prices as efficiencies of scale come up.

"If we all had to concentrate on raising our own food, we wouldn't have time to do anything else," says Howard. Happily, we don't have to do that anymore. But that doesn't let us entirely off the hook. We still have to get smart about what the people who bring us our food are selling, to find the right mix of the commercial and the local, the organic and the industrial. There's a lot more than just

groceries on the line — there's health and long life too.

EGGS

Why Buy Organic?

The feed given to the hens may include organic supplements like flaxseed meal, which increases vitamin A and omega-3 acids and improves taste. The birds are better treated too, with more room to move around.

Price: \$4.39 a dozen for grade-A large brown eggs

Why Buy Conventional?

The pluses are price and availability. It's just easier and cheaper to buy nonorganic.

Price: \$3.79 a dozen for grade-A large brown eggs

Verdict: Organic. The treatment of the birds seals the deal. An industrial hen in a battery cage is not a pretty sight.

MILK

Why Buy Organic?

Cows that produce organic milk are not treated with antibiotics or hormones; this is especially important, as drug-resistant bacteria and early-onset puberty in girls continue to be on the rise.

Price: \$6.39 per gal.

Why Buy Conventional?

Cost. There's real sticker shock in paying a \$3.50 premium per gallon, especially if you have milkgulping

kids in the house.

Price: \$2.89 per gal.

Verdict: Go organic if you can; the extra chemistry in commercial cows is just too much.

BEEF

Why Buy Organic?

Grass-fed cattle have a higher ratio of omega-3 acids, which may reduce the risk of cancer and heart disease. There may also be a lower risk of *E. coli* transmission thanks to reduced crowding.

Price: \$6.59 per lb. for 85%-lean ground beef

Why Buy Conventional?

One word: *taste*. Grain-fed beef is fattier; that means tastier. Another word: *price*. Grass-fed beef is simply out of reach for many people.

Price: \$4.49 per lb. for 85%-lean ground beef

Verdict: Opt for organic if you can afford it; it's better for you — and much better for the cows.

FRUIT & VEGETABLES

Why Buy Organic?

The pesticide risk is lower, and if the food is local and in season, it will taste better than produce that ripens during shipping. Better for the planet too.

Price: Bananas, 54¢ each.

Why Buy Conventional?

The price is lower, and not everyone has a handy farmers' market close to home. There is not much nutritional difference between conventional and organic produce.

Price: Bananas, 45¢ each.

Verdict: Conventional. Eating any produce is better than not eating it at all. Price matters — though the environment does too.

In meeting one of our most basic needs — hunger — we have opened a Pandora's box of complications. We successfully produce enough food to feed us all, but we have to treat our livestock with antibiotics to keep them healthy and spray our crops with pesticides so they survive till harvest. We feel compelled to add vitamins and supplements to food to eradicate disease and boost nutrition. Through the confusion, a word emerges that seems to resolve all the unwanted side effects of food production: *organic*. But the cost of going organic can be high — and it can be more than merely financial.

Humans are designed to use and digest foods that look the way they did when they came from the ground or were cooked fresh from an animal. No matter how much technology or genetic modification led to what's on your plate, your digestive system is pretty much the same as it was when our ancestors climbed down from the trees. So the smallest amount of industrial additives must be best, right? Maybe not.

Since our caveman days, we've learned a lot about how to protect crops and keep our animals healthy, how to farm fish and add vitamins to food to eliminate deficiencies. These are admirable achievements that stem from noble motives; as a physician, I would argue there is no higher ideal than to use food as medicine. Consider three food additives that changed the natural history of certain ailments that have plagued humankind: folic-acid supplements help prevent neural-tube defects and certain childhood cancers, increased omega-3 fatty acids boost brain development and

may increase intelligence, and vitamin D and calcium in dairy products reduce the incidence of rickets. We shouldn't be indiscriminate, but a few well-selected additives can do a lot of good. Still, introducing modern chemicals into the food chain has raised concerns as well. Hormones given to livestock to spur growth are troublesome enough to warrant the extra cost of a label declaring which meat products are hormone-free. Paying a bit extra for hormone-free meat may be a case in which spending a little more makes sense. Otherwise, read as much as possible about the various hormones used in animals, since not all of them affect us the same way.

A major advantage of modern food manufacturing is the relative absence of food-borne illnesses. Yes, there are still outbreaks of *E. coli* that sicken or kill people and prompt huge recalls, but we rarely think about the elaborate premarket safety measures that prevent such gastronomic perils from being much more common. Even a proponent of locally grown organic food like me accepts that if it makes it to your table with no safety supervision, you're at risk of getting sick.

Sometimes the consumer has to take independent action to avoid food-borne pathogens such as *E. coli* and salmonella. Always wash your hands before preparing food and anytime you switch between handling raw meats and produce. And wash once more when you're done. Wash cutting boards and utensils thoroughly — again, especially between uses for meats and for vegetables. Cook food thoroughly — at least until the center of any dish is over 145°F (and even higher for certain meats and poultry), as measured with a food thermometer. And avoid thawing and refreezing food, as this can increase contamination risk.

Here are some other shortcuts to getting the benefits of organic without the cost:

- Avoid synthetic colorants.
- Choose foods without labels, which are better than packaged foods.
- Wash fruits and vegetables thoroughly, preferably with a vegetable brush, which can enhance pesticide removal. Some foods absorb more pesticides than others and are easier to clean. The top five common items that I recommend always be washed are peaches, apples, sweet bell peppers, celery and nectarines.
- Peel fruit if possible since that removes pesticides and allows you to save money by buying nonorganic.
- Buy seasonal fruits. It lowers your grocery bill. And bear in mind, frozen veggies retain most of the health benefits of fresh ones.

Most important, remember: Caveat emptor, or buyer beware. When it comes to food, buy organic if you can afford it to help the planet. If not, you can still eat healthily with a few precautions. Food is an affordable medicine for all of us.