Eating Greener

HERE'S HOW TO GET YOUR DAILY QUOTA OF PROTEIN WHILE REDUCING YOUR CARBON FOOTPRINT

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ILLUSTRATION BY MEASURE DESIGN

YOU DO YOUR PART FOR THE ENVIRONMENT. You recycle, use compact fluorescent light bulbs and even drive a hybrid. (Okay, maybe you're not quite there yet.) But when it comes to nutrition, it's not so easy being green. After all, ingesting a plethora of protein is essential to building muscle and your main protein sources — beef, eggs, fish, milk and poultry — all carry an eco-burden. It's difficult to gobble up hundreds of grams of protein daily and be truly green, but you can become "light green" by choosing proteins that have a minimal environmental impact. ›

"AFTER CARS, THE FOOD SYSTEM USES MORE FOSSIL FUEL THAN ANY OTHER SECTOR OF THE ECONOMY— 19 PERCENT."

MICHAEL POLLAN, AUTHOR OF *THE OMNIVORE'S DILEMMA* AND *IN DEFENSE OF FOOD*, IN THE *NEW YORK TIMES*, OCTOBER 9, 2008.

But you need to understand a few things before you fill your reusable canvas shopping bag. First, what does "green" mean? The greatest environmental factor with food production is greenhouse gases (GHGs), and the big culprits are CO_2 from harvesting and transportation, nitrous-oxide emissions from fertilizers used to grow feed and methane from animal digestion. Water and soil contamination from pesticides are also a factor, but when you think food, think GHGs.

Also, with a few exceptions, what you eat is more important than how far it travels. A 2008 study in *Environmental Science & Technology* found that food transportation accounts for about 11% of the average American household's food-related GHGs, while the production phase contributes a whopping 83%.

Finally, don't confuse "greener" with "healthier." Some protein sources, especially if they're organic, may have superior health benefits or be a more humane option but aren't necessarily better for the environment. Highly personal factors come into play when buying food: cost, environmental considerations, nutrition content and treatment of animals are just a few. We aren't urging you to be environmentally perfect, just letting you know that being a little better can be simple.

Going "light green" can be complex, but make no mistake: It's possible to ease the load on the planet while still keeping your muscles fed and full.

> MEAT

The Problem: Meat is by far the environment's biggest food culprit. Livestock generates 18% of the world's GHGs, according to a report by the Food and Agriculture Organization of the United Nations. (In comparison, trains, planes and automobiles account for 13%.) And beef is the king pollutant. What does a meat-eater do short of learning to love soy burgers? Select a greener shade of meat.

Cattle raised in feedlots contribute to GHGs through heavy volumes of feed, harvesting machinery that belches CO_2 and lakes of manure. Feedlot cattle consume corn grown with fertilizers, which leads to nitrous-oxide emissions from the soil and pesticides that can taint water supplies. The more cattle eat, the more GHGs they contribute. It takes 8–10 kilograms of feed to produce 1 kilogram of body mass for beef cattle, states Christopher Weber, PhD, professor of civil and environmental engineering at Carnegie Mellon University (Pittsburgh). For pigs and chickens it's 3–4 and 1.2–2 kilograms, respectively.

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And then there are the big piles of crap. An average factory farm that houses about 50,000 cattle in pens creates massive "manure lagoons" that are often cut off from open air and don't rapidly decompose. This produces high levels of methane, which is more than 20 times more potent than CO_2.

Add it all up and feedlot beef contributes about 30% of all meat's GHG emissions, according to research from the Swedish Institute for Food and Biotechnology. Pork is second with 14% and chicken contributes 8%. Grass-fed cattle don't appear much greener, although they are raised more humanely. Some analysis suggests that the grass-fed variety, in fact, contributes 50% more GHGs due to larger pasture management and higher methane emissions since the animals need about 200 more days to reach butchering weight.

You'd look sad, too, if you had to stand in your own s--t all day

ROBERT MCGOUEY/AGE FOTOSTOCK

Lower Your 'Print: Eat more chicken and fish (more on fish later). You can narrow your footprint with cage-free and free-range poultry since their feed is often supplemented with bugs and other natural foods, Weber says.

Still have a stake in steaks? Opt for grass-fed beef. These cattle aren't subject to barbarous conditions and you sidestep two major GHG contributors: corn feed and manure lagoons. Even though grass-fed cattle's diet switches to hay in winter, it still contributes less GHGs than corn-fed cattle, notes Chris Benbrook, PhD, chief scientist at The Organic Center in Boulder, Colorado. Grass-fed is also healthier: one-third less fat per serving, 2–4 times more omega-3s and more fat-burning conjugated linoleic acid (CLA). Look for "grass-fed" or "range-fed" on labels. Avoid buying meats with labels stating "mostly grass-fed" or "grass-finished."

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THE GOOD NEWS IS, RESEARCH SHOWS YOUR REGULAR MILK IS FAR GREENER THAN YOUR GRANDPARENTS'

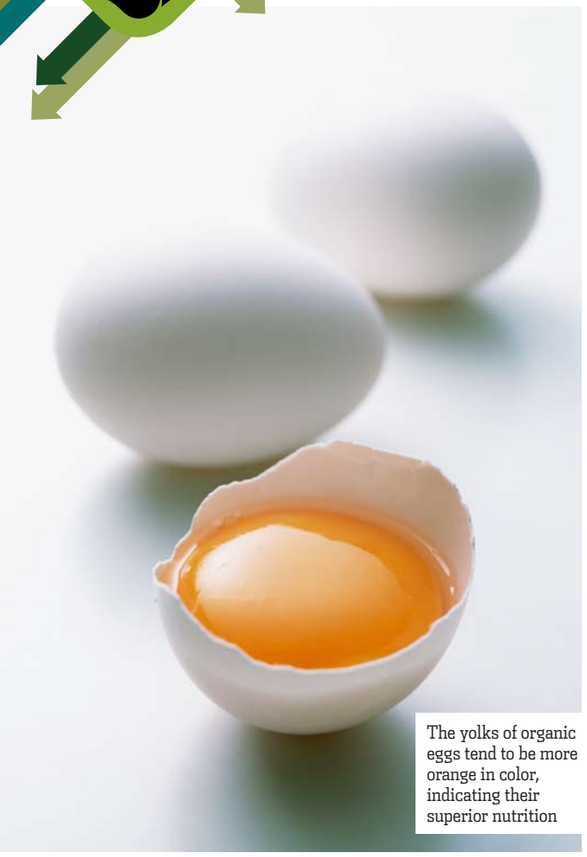
> MILK

The Problem: About 80%–90% of milk's carbon footprint originates on the farm. The main contaminators are similar to those of cattle: methane, nitrous oxide and pesticides.

The good news is your regular milk is greener than your grandparents'. Research in the *Journal of Animal Science* (June 2009) found that the carbon footprint of a gallon of milk in 2007 was only 37% of what it was in 1944. Back then America generated 117 billion pounds of milk annually from 25.6 million cows. Today we create 186 billion pounds from only 9.2 million cows. Advances in genetics, milking technology and nutrition enable using fewer cows to generate more milk. And fewer cows equal less GHGs.

Still, milk is far from carbon-free. The debate is what's greener: traditional or organic milk. A regular dairy cow chomps corn-based feed grown with GHG-emitting fertilizers. They eat practically nonstop during their average 1.8 lactation periods — approximately 390 days each. In comparison, organic cows (animals raised on organic feed and not exposed to hormones or antibiotics) have shorter lactation periods of

QUICK TIP
Milk production is measured in pounds rather than gallons. One gallon of milk equals 8.6 pounds.



The yolks of organic eggs tend to be more orange in color, indicating their superior nutrition

about 320 days because they're under less stress to produce and rebreed with fewer attempts than on the conventional farm, Benbrook says.

This means they produce 20%–25% less milk during the same duration as a regular farm cow. "Yet organic cows are typically milked for an average 4.5 lactations because they live longer and produce about the same amount of milk over their lifespans as a regular cow," he explains.

Organic cows also consume feed that's grown with more earth-friendly fertilizers, which contributes less GHGs. The downside? Since organic cows live longer, they blow out more methane gas as a normal part of their digestion. "However, there are fewer nitrous-oxide emissions from the production of feed on organic farms, so there isn't a big difference in total GHGs per pound of milk produced," Benbrook points out.

Lower Your 'Print: Since there's a fine green line between organic and conventional milk, we recommend organic for its higher levels of antioxidants, CLA, omega-3s and vitamins as well as lack of exposure to antibiotics and hormones. And there's no difference between whole, low-fat and 2% dairy (including cheese, cottage cheese and yogurt) in terms of carbon emissions. Any fat removed is put into other dairy products such as butter and cream.

› EGGS

The Problem: Unlike meat and milk, road miles play a central role in the greenness of eggs. The prevailing theory is that driving to the local farmers market or farm contributes less GHGs than a diesel-guzzling grocery truck.

But that's not exactly true, says Jude Capper, PhD, assistant professor of animal sciences at Washington State University (Pullman). She co-led a study that found that a dozen eggs transported 808 miles to a grocery store in a tractor-trailer — which can house about 23,400 eggs — is a greener option than a dozen eggs bought at a farmers market (95 miles round trip) or local farm (28 miles round trip.) "Farmers-market and local-farm eggs use 4.5 and 17.2 times more fuel per dozen eggs, respectively, than a tractor-trailer," she says. "Even when local eggs are only 2 miles farther than the grocery store, the store-bought eggs are still more eco-friendly."

Can eggs be greener on the farm? Feed production accounts for the largest footprint in the entire egg/poultry cycle, says Hongwei Xin, PhD, director of the Egg Industry Center at Iowa State University (Ames). Hens are fed a mixture of corn and soybeans, which gives them the energy needed to lay 255–290 million eggs each year. But compared to organic and free-range chickens (fed all-natural diets and/or allowed to roam more freely than caged birds), your traditional cage-laid eggs may be better for the environment.

Research from Adrian Williams, PhD, of Cranfield University (UK), estimates that when all factors are considered, organic, free-range hens have about a 20% greater impact on global warming than conventionally raised birds. The main reason: They take longer to reach laying age and thus eat more feed. Also, these hens consume more overall energy since they're inside during colder months. "Most free-range farms have fewer birds and less generated body heat, which means the barns use more heat to keep them warm," Xin explains. "Plus the free-range hens consume extra feed during this time to help increase their individual body temperatures."

Lower Your 'Print: Traditional eggs appear to be the greenest, but they aren't better for you or more humane. Free-range chickens, which are often organic, have the freedom to move and exercise certain natural behaviors such as wing-spreading and dust-bathing. And their eggs, like free-range organic beef

TRADITIONAL EGGS APPEAR TO BE GREENEST, BUT THEY AREN'T BETTER FOR YOU OR MORE HUMANE. AND ORGANIC EGGS ARE MORE NUTRITIOUS

DATACRAFT/AGE FOTOSTOCK

FROZEN WILD FISH IS GREENER THAN FROZEN FARM-RAISED, NOT TO MENTION HIGHER IN OMEGA-3s

JOEL SARTORE/GETTY IMAGES

and milk, are nutritionally superior. But if lowering your footprint is a priority, you'll need to look past that. Whatever you choose, purchase two dozen eggs on each grocery trip. Doubling your carrying capacity cuts your fuel consumption per dozen eggs by almost 50%.

> FISH

The Problem: The story with fish isn't overfishing or even farm-raised vs. wild, but rather how quickly your fillet travels to the seafood section at the market.

Forget your fetish with fresh and go with frozen, says Astrid Scholz, PhD, an ecological economist in Portland, Oregon. She co-led a study that examined the complete life cycle of farmed and wild salmon — from how it's raised on the farm or caught to when it's for sale in the store — and discovered that both types have about twice the environmental impact as frozen.

Three-quarters of the world's salmon comes from three major markets: wild Northeast Pacific (including Alaska and British Columbia), and farm-raised Northeast Atlantic (Norway and Scotland) and Chilean.

Fresh salmon, whether caught or raised, must be flown to its destination within 24 hours, and airplanes are the world's most carbon-intense form of travel. "Air travel is about 100 times worse than a container ship and 10 times worse than a truck," Scholz remarks. When salmon is flash-frozen, it can be delivered via rails, slow boats and truck. Canned fish, even though it doesn't have to be shipped fast or stored cold, is thought to have a slightly higher carbon footprint because of the canning process.

GREEN NEWS
On Jan. 30, Target stores announced that they will sell only wild-caught salmon from now on.

Frozen wild is greener than frozen farm-raised, not to mention higher in omega-3s. Wild Alaskan salmon frozen and shipped to Chicago emits 3 kilograms of CO_2 equivalent (a combination of CO_2 and other related GHGs converted into CO_2). In comparison, frozen farm-raised Chilean salmon contributes 4 kilograms but also comes with other GHG factors like processed food pellets, which are often made with fish oil and meat byproducts.

Lower Your 'Print: Select frozen wild Alaskan salmon. Not all salmon labeled "fresh" is bad, though; read the fine print to see if it was previously frozen, Scholz advises.

If salmon isn't on your menu, reference the Seafood WATCH guide published by the Monterey Bay Aquarium (Monterey, California). It lists green fish choices by region, taking environmental factors such as overfishing status and the effect of fishing on ocean ecosystems into account. The pocket-size guide can be printed or downloaded to your phone. montereybayaquarium.org/cr/seafoodwatch.aspx **M&F**

[for references, visit muscleandfitness.com]