



September 2014

Comments submitted to the U.S. Department of Agriculture and Department of Health and Human Services 2015 Dietary Guidelines Advisory Committee

Request 5-2 Food Systems Sustainability

Friends of the Earth applauds the USDA and Department of Health and Human Services for their commitment to incorporating sustainability concerns into the 2015 Dietary Guidelines. Given the general public's limited knowledge about the widely varying ecological footprint of different foods, it will be extremely helpful to provide guidance on food choices that are better for the planet and human health.

Stronger guidance needed around reduced consumption of animal products.

The science is clear that a diet with less meat and more plant protein is better for our health and the planet. It is also better for our nation's financial well-being and productivity given the soaring health care costs directly related to high consumption levels of animal products.

Encourage better, more sustainable, organic animal proteins. In addition to urging less animal product consumption overall, the 2015 Dietary Guidelines should stress the health and ecological benefits of more sustainably and organically-produced meat and dairy products. Many studies have shown that these methods of production result in [cleaner water](#), [healthier, carbon-rich soils](#), fewer toxins, and improved [biodiversity](#) and pollinator habitat in comparison with conventional, chemical-intensive industrial production. When people eat less meat, they can afford better meat that has been raised entirely on pasture or organically without the use of antibiotics, hormones, synthetic pesticides and chemical fertilizers. A [2010 review](#) of three decades of research found that grass-fed beef provides higher levels of nutrients, including Omega-3 fats, beta-carotene, conjugated linoleic acid and Vitamin E than grain-fed beef.

Americans consume significantly more meat and fewer plant-based foods than is recommended by USDA guidelines and far more than the [rest of the world](#). High consumption of industrially-produced meat, especially red meat, is associated with increased risks of diet-related disease ([heart disease](#), [diabetes](#), and [cancer](#)), large quantities of energy-intensive inputs (like pesticides, fertilizers and fuel) and ingestion of harmful pesticides and [dioxin](#).

Diets heavy in animal products carry large carbon, nitrogen and water footprints and contribute to significant air and water pollution. Beef in particular carries an [outsized impact](#). Compared to chicken, beef requires 69 times the land, 22 times the water, 10 times the nitrogen fertilizer, and generates 10 times the greenhouse gas emissions per unit of protein.

Plant-strong diets are more sustainable for people and the planet. Plant-based proteins require far fewer resources (nitrogen, water, energy, land) per gram of protein. Lentils, for example, use [65% less water than beef](#) and emit [thirty times fewer](#) greenhouse gas emissions. Plant-based diets are also associated with lower weight, reduced diabetes risk and longer life spans.

Given these facts, the 2015 Guidelines must make clear that all proteins are not created equal when it comes to environmental and health impact. In particular, we urge you to stress the health and environmental benefits of eating more plant-based proteins, while scaling back intake of animal proteins, especially red meat and dairy. Since half of all meals are consumed outside the home, it will be key to stress the important role of food service, including restaurants and governmental feeding programs, in reducing meat portion sizes and putting more plant protein dishes on the menu.

USDA food and farm policy must align better with dietary guidelines and sustainable diets.

Many USDA programs and policies are out of alignment with achieving healthier, sustainable diets that include less meat, more plants and less chemical exposure. The USDA-supervised animal foods check-off programs, for example, are in direct contradiction with the need to reduce American's meat intake. These programs are designed to encourage greater, not less consumption of animal products even though health and environmental concerns and current USDA dietary guidelines necessitate a reduction in consumption of these foods. USDA should instead encourage more of those funds to be used for research to help livestock producers improve food safety and reduce environmental impacts.

Reduced food waste is a key feature of more sustainable diets. Roughly 30 percent of food ends up in the garbage, with an annual [economic loss of \\$165 billion](#). Meat accounts for 41 percent of all food waste. Minimizing food waste is therefore a key strategy for reducing the unnecessary use of water, fuel and other chemical inputs (e.g. antibiotics, pesticides, fertilizers, growth hormones) and for reducing the tremendous environmental damage caused by meat and other food production.

In conclusion, even a modest reduction of meat in the average American diet could have far-reaching impacts on the environment, economy and health of our nation.

Please find our detailed comments with references attached. Thank you.



September 8, 2014

2015 Dietary Guidelines Advisory Committee
Dietary Patterns, Foods and Nutrients, and Health Outcomes Subcommittee
U.S. Department of Health and Human Services
Office of Disease Prevention and Health Promotion
1101 Wootton Parkway, Suite LL100
Rockville, MD 20852

RE: 5-2 Integrating Sustainability Concerns into Dietary Guidelines; Food Systems Sustainability

Friends of the Earth applauds the U.S. Department of Agriculture and the Department of Health and Human Services for incorporating sustainability and natural resource concerns into the 2015 Dietary Guidelines. Given the general public's limited knowledge about the widely varying ecological footprint of different foods, it will be extremely helpful for these agencies to provide information and guidance on food choices that are better for the planet and human health.

I. Recommendations

A. Stronger guidance needed around reduced consumption of animal products. The science is clear that a diet with less meat and more plant protein is better for our health and better for the planet. It is also better for our nation's economy and productivity given the soaring health care costs that are directly related to high consumption levels of animal products.

Americans consume significantly more meat than is recommended by USDA guidelines and far more than the rest of the world.ⁱ This high consumption of industrially produced meat, especially red and processed meat, is associated with increased risks of diet-related disease ([heart disease](#)ⁱⁱ, [diabetes](#)ⁱⁱⁱ, and [cancer](#)^{iv}), large quantities of energy-intensive inputs (pesticides, fertilizer and fuel) and ingestion of harmful pesticides and cancer-causing [dioxin](#)^v.

Diets heavy in animal products also carry large carbon, nitrogen and water footprints and contribute to significant air and water pollution. In contrast, plant-based proteins require far fewer resources (nitrogen, water, energy, land) per gram of protein and generate much less pollution. They are also associated with lower weight, lower blood pressure, longer life spans and reduced risk of diabetes.^{vi}

Given these facts, the 2015 Guidelines must make clear that all proteins are not created equal when it comes to environmental and health impacts. In developing protein consumption guidelines, we urge you to stress the health and environmental benefits of eating more plant-based proteins and scaling back intake of animal proteins, especially red and processed meat. Since half of all meals are consumed outside the home, it will be important to highlight the important role of food service, including restaurants and governmental feeding programs, in reducing meat portion sizes and putting more plant protein dishes on the menu.

B. Encourage better, more sustainable, organic animal proteins. Besides urging less animal product consumption, the Dietary Guidelines should also stress the health and ecological benefits of pasture-raised and organically-produced meat and dairy products. When people eat less meat, they can afford better meat that has been raised on pasture and/or raised organically without the use of antibiotics, hormones, synthetic pesticides and chemical fertilizers.

Many studies have shown that these production methods deliver cleaner water,^{vii,viii} healthier soils,^{ix} fewer toxins, greater biodiversity and pollinator habitat,^x and fewer toxins when compared to conventional, chemical-intensive industrial production. Furthermore, well-managed pasture based livestock systems can help to mitigate climate change by sequestering carbon in the soil.^{xi} In addition, a 2010 review of three decades of research found that grass-fed beef provides higher levels of nutrients, including Omega-3 fats, beta-carotene, conjugated linoleic acid and Vitamin E than grain-fed beef.^{xii} A 2013 study published in PLoS ONE found that grass-fed organic dairy has far higher levels of Omega-3 fats than grain-fed dairy.^{xiii}

C. Reduced food waste is a key feature of more sustainable diets. Roughly 30 percent of our food ends up in the garbage, with an annual economic loss of \$165 billion.^{xiv} Meat accounts for 41 percent of all food waste and typical rates of meat waste amount to 25 percent.^{xv} Minimizing food waste is therefore one of the most important strategies for reducing the unnecessary use of water, fuel and other chemical inputs (e.g. antibiotics, pesticides, fertilizer and growth hormones) and for reducing the tremendous environmental damage caused by meat and other food production.

D. USDA food and farm policy must align better. Many USDA programs and policies are considerably out of alignment with the goals of healthier, more sustainable diets that include less meat, more plants and less chemical exposure. The USDA-supervised animal foods check-off programs, for example, are in direct contradiction with the need to reduce American's meat intake. These programs are designed to encourage greater, not less, consumption of animal products, even though health and environmental concerns and current USDA Dietary Guidelines necessitate a reduction in consumption of these commodities overall. Current funding that is directed to increasing sales should be redirected to initiatives that help meat producers reduce their environmental and food safety impacts, and diversify their operations into other more healthful agricultural commodities.

II. Background

A. Major Environmental Impacts from Meat Production

The science is clear that less meat production and consumption translates into significant environmental benefits including cleaner water (fewer pesticides, hormones, nitrates and manure toxins); a smaller carbon footprint; significant water savings; more habitats for bees, butterflies and other essential organisms; and more land available for food production.

The production of meat in the U.S. – at roughly 55 billion lbs. per year (167 lbs. per capita)^{xvi} – from 9 billion animals requires massive amounts of pesticides, chemical fertilizer, fuel, feed, land and water. In the process, it emits large amounts of greenhouse gas emissions and generates mountains of manure, fertilizer run-off, and other pollutants that contaminate our air and water. Animal agriculture is a major driver of climate change, habitat destruction and deforestation.

Measured in land, water, greenhouse gases and nitrogen fertilizer, animal agriculture is far less resource efficient than plant agriculture. Among all meat products, beef presents the most significant concerns. Beef is a highly inefficient way for humans to get protein, with numerous studies documenting the vast amounts of resources (land, water, pesticides, fertilizer, fuel and feed) required. According to a 2014 study in the journal *PNAS*, beef requires “~28, 11, 5, and 6 times the average land, irrigation, water, GHG, and nitrogen fertilizer of other animal categories.”^{xvii}

In the process, major environmental degradation occurs. A report from the Food and Agriculture Organization on livestock's environmental impacts singled out beef production as a primary driver of deforestation, grassland degradation and biodiversity loss.^{xviii} Studies in the U.S. have demonstrated major water pollution^{xix} and public health impacts^{xx} of beef production, among others.^{xxi}

Climate Change and Greenhouse Gas Emissions

According to the latest EPA greenhouse gas inventory, agriculture accounts for over eight percent of total GHG emissions in the U.S.,^{xxii} though this figure does not incorporate full lifecycle emissions,

which are far higher. When it comes to greenhouse gas emissions, all meat is not created equal, yet all classes of meat protein have a much higher carbon footprint than plant proteins.

On a global scale, scientists have documented that the climate change and other environmental impacts and land needs of cattle are far higher than those of other farm animals. A recent meta-analysis of life cycle assessments of protein foods by the Netherlands Environmental Assessment Agency, for example, found that beef's greenhouse gas emissions are five to ten times higher than pork and chicken and as high as 100 times higher than vegetable proteins.^{xxiii} A recent University of Michigan study found that while beef accounts for only 4% of the retail food supply by weight, it represents 36% of the diet-related GHG emissions.^{xxiv}

The Environmental Working Group lifecycle analyses of GHG emissions showed large variations in carbon footprints among animal and plant protein sources. Beef is estimated to produce 27 kg GHG/kg of consumed food, twice that of cheese, 4 times more than chicken, and 30 times more than lentils. Most of this comes from the production phase, including enteric fermentation, feed production, and manure.^{xxv} The cattle industry topped the natural gas sector as the primary methane-emitting source in the United States in 2012, accounting for 25 percent of all methane output.^{xxvi}

For the first time, a [recent report](#) issued by the UN Intergovernmental Panel on Climate Change (IPCC) identified the vital role that reduced meat consumption can play in mitigating climate change and addressing other environmental issues, pointing out that “changes in human diet can have a significant impact on GHG emissions.” One of the most important findings in the IPCC report is that “the potential to reduce GHG emissions through changes in consumption (that include some meat, fish and eggs) was found to be substantially higher than that of technical mitigation measures.”^{xxvii}

Water Usage

An unprecedented drought is gripping the nation's critical food producing areas. With the acceleration of climate change, we will only have less, not more water available for agriculture. Given the large quantities of water that go into animal agriculture production, shifting diets away from animal products must play a key role in our efforts to feed more people with less water. This is as true for the rest of the world as the U.S. A recent global analysis found that a global diet free of meat, eggs and milk (but rich in plant protein) would reduce global green (i.e. rain) and blue (i.e. surface and ground) water use 21 percent and 14 percent respectively, enough to feed 1.8 billion additional people.^{xxviii} Clearly, even modest reductions of 25-50 percent have the potential to result in huge water savings.

Massive amounts of water are required to raise the corn and soy that are fed to cows, chickens and pigs, instead of being used to raise less water-intensive crops that can be fed to people. Beef especially has an outsized water footprint compared to other food crops. For example, the water used to produce one ton of beef in the U.S. is estimated to be 13,193 m³/ton -- 5.5 times the amount needed to produce chicken and 8.7 times the amount needed to produce eggs.^{xxix} Globally, water use for protein-rich legumes such as lentils, beans, and chickpeas is estimated to be only 45 percent, 39 percent, and 32 percent that of beef.^{xxx} These numbers show how replacing some animal products, especially beef, with plant-based alternatives would have big effect on water sustainability.

Nitrogen and Nitrate Pollution

The “nitrogen footprint” (i.e. the loss of reactive nitrogen to the environment) of the U.S. is one of the highest in the world primarily due to high meat consumption, resulting in acid rain, coastal “dead zones,” and other cascading environmental effects. By one estimate, beef production has a nitrogen footprint 2.5 times greater than poultry, 6 times greater than grains, and 12 times greater than legumes.^{xxxi} A recent United Nation's study found that Europe could cut its agricultural nitrogen and GHG emissions by as much as 40 percent if Europeans cut their meat consumption in half.^{xxxii}

Habitat Destruction/Loss of Biodiversity

The planting of vast monocultures for animal feed has led to the loss of critical habitat for many beneficial plants and pollinators, including honeybees, which are critical to our food supply. According to Environmental Working Group data,^{xxxiii} between 2008 and 2011, more than 23 million acres of grasslands, shrub land and wetlands were converted to row crops, in part to supply biofuel plants and animal factory farms. Destruction of these native prairie lands releases large amounts of carbon from the soil into the atmosphere while destroying precious biodiversity and valuable habitat. Less meat consumption would put far less pressure on these natural biodiverse ecosystems.

B. Health Benefits of Consuming Less Meat

Decades of research support the conclusion that the overconsumption of meat, especially red and processed meat, contributes to countless chronic health problems and imposes huge healthcare costs on our economy. Higher rates of obesity, diabetes, heart disease, and cancer are all associated with high red and processed meat consumption.

For example, a recent meta-analysis of three large cohort studies from the U.S. found every 3.5 oz. serving of unprocessed red meat eaten per day increased the risk of developing type 2 diabetes by 19 percent.^{xxxiv} Data from the cross-sectional, nationally representative National Health and Nutrition Examination Survey (NHANES) shows that those who consume the most meat had a 27 percent higher chance of being obese than those who ate the least.^{xxxv} And in a study of over half a million U.S. men and women, researchers found that consumers of the most red and processed meat had an increased risk of esophageal, colorectal, liver, and lung cancer ranging from 16-60 percent.^{xxxvi}

Especially striking is the potential for certain protein sources to both help and harm our longevity. In a large study of 121,000 U.S. men and women over 28 years, red meat consumption significantly increased the risk of mortality, while other protein sources reduced it. Compared to those eating little meat, one serving/day of unprocessed red meat increased the risk of mortality by 13 percent. Replacing that serving with poultry, fish, or legumes reduced the risk of early death by 14 percent, 7 percent and 10 percent respectively.^{xxxvii}

Reduced Meat Consumption Can Reduce Dioxin Intake

According to Environmental Protection Agency 95 percent of our exposure to cancer causing dioxin like compounds (DLC) come from meat, dairy, fish and shellfish.^{xxxviii} These dioxins are created through industrial production processes (like incineration, pesticide production and chlorine bleaching) and deposited on plants, soil, and water, where they bioaccumulate in the fatty tissues of animals.

The Food and Drug Administration, the Environmental Protection Agency, [World Health Organization](#) and the National Academy of Sciences all agree that the best way to lower personal dioxin levels is to [reduce dietary exposure](#) to dioxins by lowering animal fat intake and increasing consumption of fruits, vegetables, and whole grains.^{xxxix} Given the significant health concerns, the 2015 Dietary Guidelines should highlight the little known fact that most of our exposure to cancer-causing dioxin-like compounds (DLC) come from meat, dairy, fish and shellfish.

Health Benefits of a Plant-Based Diet

While most Americans will not solely choose a vegetarian diet, it is important to emphasize that a plant-based diet is a nutritionally appropriate alternative that is beneficial to health and the environment. The USDA,^{xl} American Dietetic Association^{xli} and other top health organizations agree that a well-planned vegetarian or vegan diet can provide all necessary nutrients. Research shows additional health benefits. The most recent analysis of the decades-old Adventist Health Studies showed that in a cohort of over 73,000 U.S. and Canadian citizens, every kind of vegetarian diet was associated with lower BMI values, lower all-cause mortality, and a lower prevalence of high blood pressure, obesity, and diabetes.^{xlii}

III. Conclusion

The incorporation of sustainability concerns into the 2015 Dietary Guidelines has the potential to improve the health of the American people and our environment. Even a modest reduction of meat in the average American diet could have far-reaching impacts on the environment, economy and the health of our nation.

Please help fulfill the USDA's mission to "provide leadership"^{xliii} on issues of food, natural resources and nutrition by providing explicit guidance on the urgent health and environmental imperatives of reducing consumption of animal products, eating more plant-based proteins and wasting less food. Please also urge USDA to better align their policies with these goals. Thank you for this opportunity to comment.

Sincerely,

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