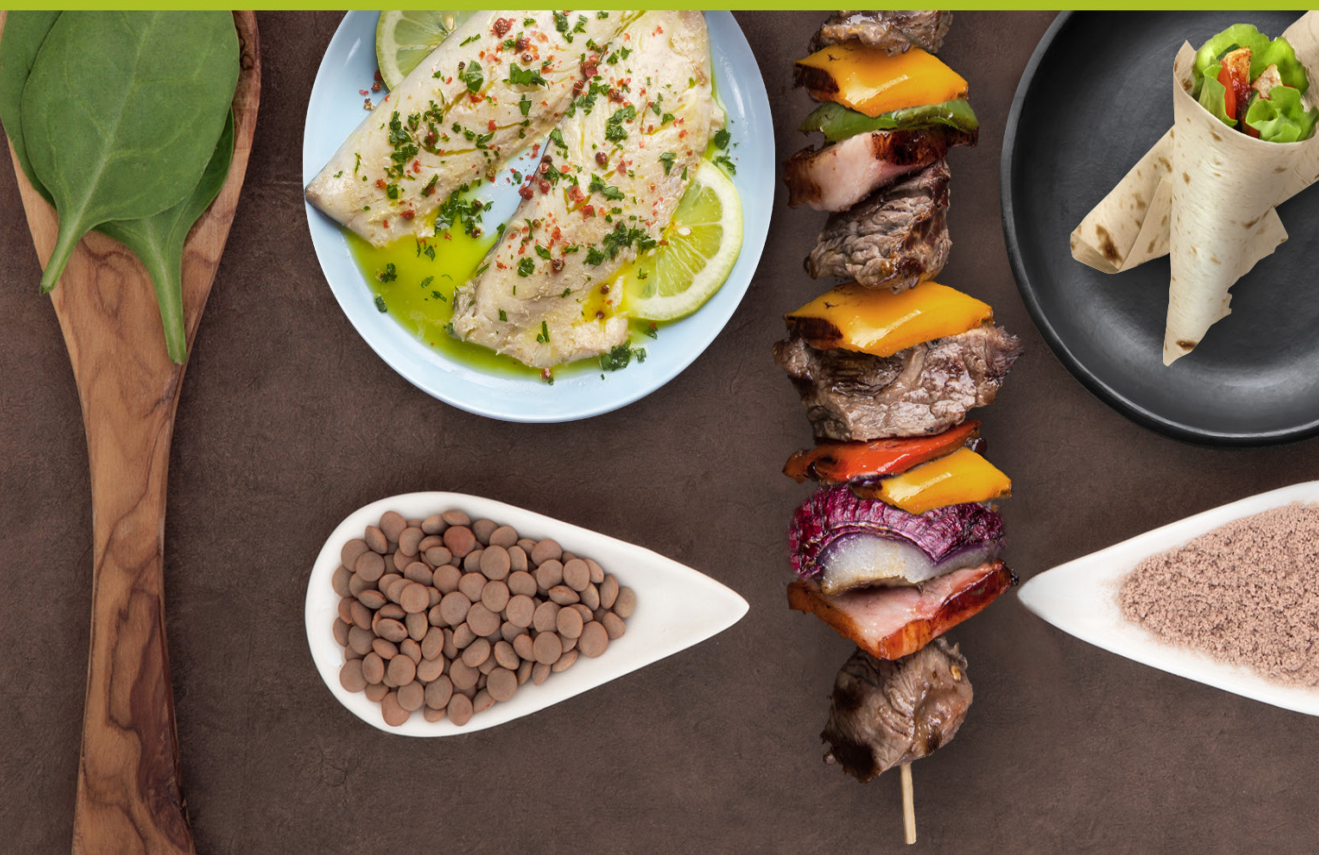




MENUS^{of} CHANGE[®]

The Business of Healthy, Sustainable, Delicious Food Choices



PROTEIN PLAYS: FOODSERVICE STRATEGIES FOR OUR FUTURE


Culinary Institute
of America



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CONTENTS

- I. A Priority for Change 3
- II. General Guidance: Health, Environment, and Risk Management 5
- III. Myths to Avoid: What the Evidence Shows 7
- IV. Toolkit: Culinary and Menu Strategies. Flavors, Techniques, and Approaches 8

For more information, visit

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I. A PRIORITY FOR CHANGE

REDUCING THE AMOUNT OF RED MEAT (E.G., BEEF, PORK, AND LAMB) ON MENUS AS PART OF A MOVEMENT TO PLACE A GREATER EMPHASIS ON HEALTHY, PLANT-BASED FOODS—INCLUDING PLANT-BASED PROTEINS—IS THE SINGLE MOST IMPORTANT CONTRIBUTION THE FOODSERVICE INDUSTRY CAN MAKE TOWARD ENVIRONMENTAL SUSTAINABILITY. SUCH EFFORTS WILL ALSO GREATLY REDUCE INCIDENCE OF CHRONIC DISEASE, AND, IF WELL-CONCEIVED, MARK A PATHWAY TO FUTURE INDUSTRY COST MANAGEMENT AND FINANCIAL SUCCESS.

While balancing special occasion and everyday dining, American foodservice will always find a significant role for all proteins. Opportunities for innovation on the part of today's chefs, menu R & D specialists, and other industry business leaders include building strategies that integrate each of these imperatives, mitigating foreseeable risk, and delivering food experiences that delight current and future customers. Chefs' pursuit of "deliciousness" is not in opposition to next-generation protein plays that significantly advance environmental sustainability and public health.

These protein strategies are an outgrowth of Menus of Change, a joint project of The Culinary Institute of America and Harvard T. H. Chan School of Public Health—Department of Nutrition. Please consult The Nutrition Source and Menus of Change websites for scientific references.

A NOTE ON DEFINITIONS:

Sustainability (as in sustainable agriculture) is the production of food, fiber, or other plant or animal products using farming techniques and fisheries management practices that protect the environment, public health, human communities, and animal welfare. These forms of agriculture and fisheries management enable us to produce healthful food without compromising future generations' ability to do the same.

Livestock means animals kept on a farm to produce food. It refers to farmed animals including farmed fish. The addition of farmed fish is increasingly common as the issue of antibiotics expands to include farmed fish.

- 🍴 **Meat** - beef, pork, lamb, and poultry.
- 🍴 **Red meat** - beef, pork, and lamb.
- 🍴 **Animal protein** - meat, fish, eggs, and dairy.

RELATIVE GREENHOUSE-GAS EMISSIONS ASSOCIATED WITH SEVERAL COMMON PROTEIN SOURCES

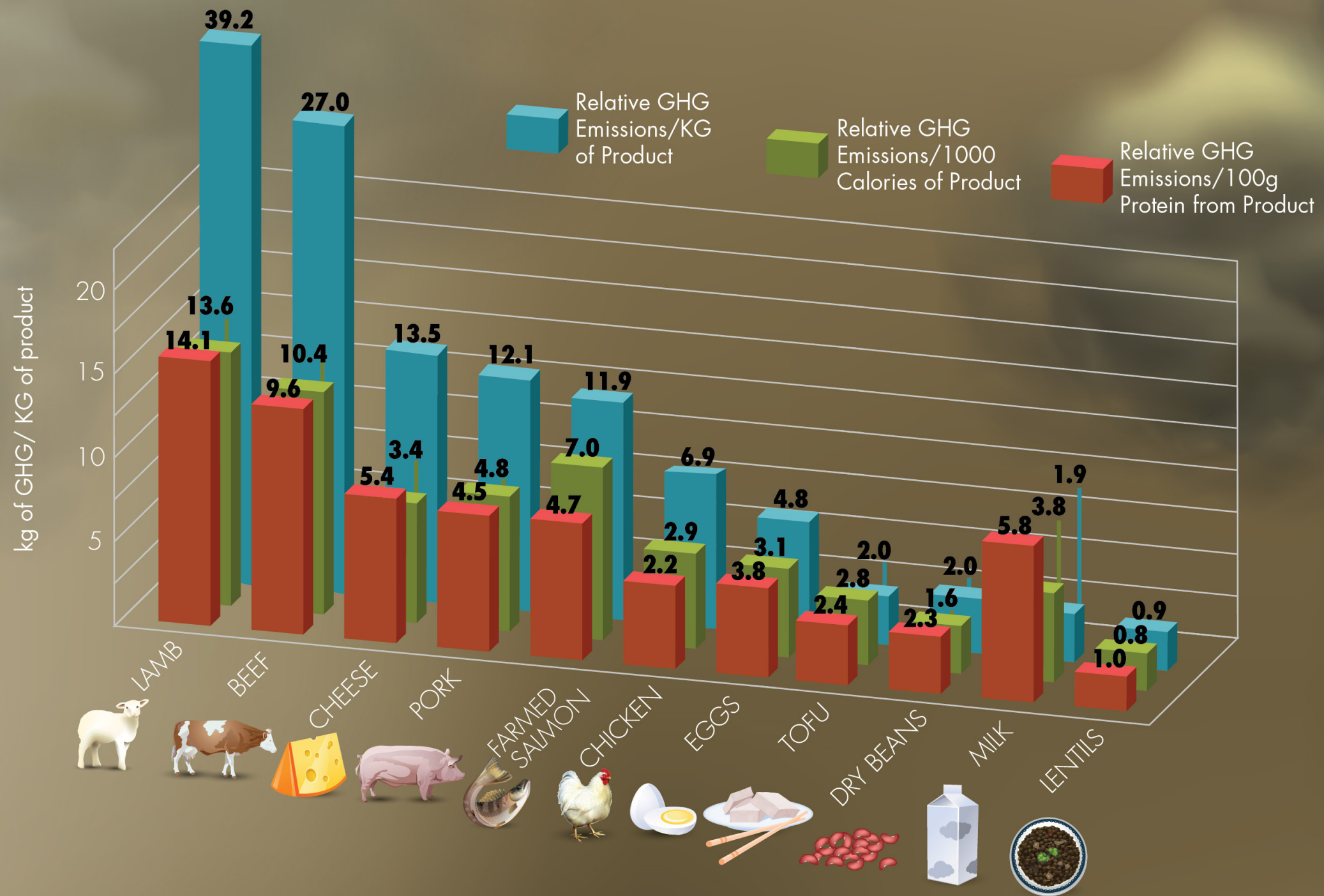


Table 1 illustrates the greenhouse-gas emissions associated with several common protein sources and is a good indicator of environmental impact including energy and chemical use, soil management, and mechanical irrigation. Both public health and the environment will improve if restaurants decrease the amount of red meat on menus and replace it with alternative protein sources.

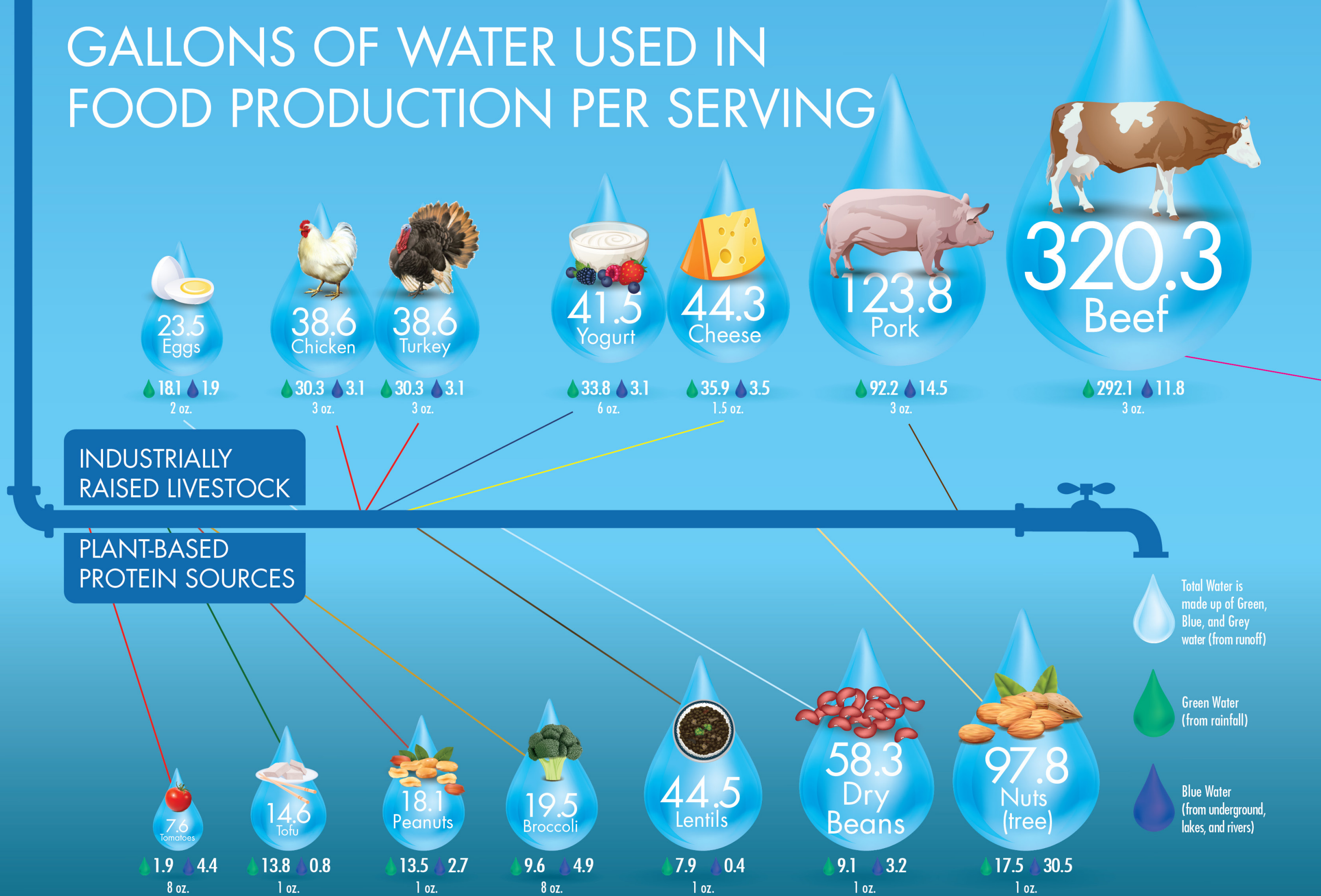
*Calorie Reference: USDA National Nutrient Database for Standard Reference, Release 25: Energy (kcal) Content of Selected Foods per Common Measures, <https://www.ars.usda.gov/SP2UserFiles/Place/12354500/Data/SR25/nutrlst/sr25a208.pdf>
 **Protein Reference: USDA National Nutrient Database for Standard Reference, Release 25: Energy (kcal) Content of Selected Foods per Common Measures, <https://www.ars.usda.gov/SP2UserFiles/Place/12354500/Data/SR25/nutrlst/sr25a203.pdf>



II. GENERAL GUIDANCE: HEALTH, ENVIRONMENT, AND RISK MANAGEMENT

- ✎ **Reduce the frequency and portion size of red meat on menus and minimize the use of processed meats.** For optimal health, your customers should be consuming no more than a few ounces of red meat per week.
- ✎ **Understand the impacts of high-volume meat production** – including its substantial contribution to greenhouse gas emissions (please see the graphic on p.4), outsized use of arable land and fresh water use (please see the graphic on p.6), and inefficiency in converting crops into protein – as a function of how we use our resources to ensure future food security. *These negative environmental effects are amplified as we anticipate the addition of two to three billion people to the planet within 35 years and track the accelerating adoption of meat- and animal protein-centered Western diets throughout the world.*
- ✎ From environmental and food security (protein conversion) perspectives, **favor pork over beef and lamb production when menuing red meat.**
- ✎ **Do not replace calories from red meat with refined grains, sugars, or other fast-metabolizing carbohydrates (e.g., potatoes),** which should be minimized in our diets.
- ✎ **Increase the use and variety of plant-based protein sources,** including nuts, legumes, vegetables, and whole/intact grains, paired with moderate to liberal amounts of healthy, plant-based oils.
- ✎ **Feature a greater diversity of seafood species** from sustainable wild and farmed sources to provide customers with one to two servings of fish and seafood per week.
- ✎ **Carefully select dairy foods in small to moderate amounts** to optimize health and environmental impacts.
- ✎ **Choose poultry and eggs as preferable options over red meat.**
- ✎ **Use both eggs and poultry in small to moderate portions,** because while poultry production has a lower environmental footprint than that of red meat, it still represents higher negative impacts than production of plant-based protein sources.
- ✎ **Support and promote the substantial reduction of antibiotics in animal agriculture** by avoiding producers that have systemic programs for broad use of antibiotics with healthy animals.
- ✎ **Plan for rising costs along with increasing price volatility for animal proteins** as pressures on the livestock sector grow in significance from factors including climate change, limits to land and water resources, greater risks of disease, and increasing global demand.

GALLONS OF WATER USED IN FOOD PRODUCTION PER SERVING



Source Data: m3/ton in Water Footprint Network Water Statistics Table (Animals, Crops) for the U.S.
Sources: T. Harter, 2015, Changing Tastes, 2015 and M.M. Mekonnen and A.Y. Hoekstra, "The Green, Blue and Grey Water Footprint of Crops and Derived Crop Products," and "The Green, Blue and Grey Water Footprint of Farm Animals and Animal Products," Value of Water Research Report Series No. 47 and 48, UNESCO-IHE, Delft, the Netherlands, 2010.

III: MYTHS TO AVOID: WHAT THE EVIDENCE SHOWS

MYTH: “High-quality” protein is better for you than “low-quality” protein.

FACT: “High-quality” protein is a scientific term that refers to an animal protein source such as red meat, poultry, fish, eggs, and dairy that provides all essential amino acids and supports rapid growth of young mammals. On the other hand, a “low-quality” plant-based protein source such as beans and legumes does not contain all essential amino acids, but eating two or more plant-protein sources can often provide all essential amino acids that the body needs. In terms of chronic disease prevention, the traditional definition of protein quality does not seem very relevant. Convincing research indicates that poultry, fish and other seafood, as well as “low-quality” plant-based proteins such as beans, legumes, and nuts are healthier choices for adults than “high-quality” proteins such as red meat.

MYTH: Our Paleolithic ancestors seemed to thrive on meat, so it must be a healthful choice for us.

FACT: Our lifespan has more than doubled since the Paleolithic era. Further, it’s nearly impossible to reconstruct with any certainty the diet and disease patterns of people who lived many thousands of years ago. Contemporary research indicates that optimal diets are those that restrict red meat to no more than a secondary role in the diet, such as in the now widely studied traditional Mediterranean diet.

MYTH: Red meat is key to healthy weight strategies.

FACT: Red meat has been associated with greater weight gain than other “protein packages” such as nuts and yogurt. However, replacing red meat with diets high in sugar, refined grains, and other fast-metabolizing carbohydrates (e.g., potatoes) is not desirable. Over the long term, protein sources other than red meat are much better choices to also prevent the development of chronic diseases and achieve optimal health. Eating more animal protein than Americans do now on average is not necessary to achieve a healthy weight, and most Americans currently eat more protein than they need to maintain lean muscle mass.

MYTH: Butter is back.

FACT: Butter is more than 60 percent saturated fat and a by-product of dairy and beef production. While it is a far better choice than margarines containing trans fats (though many soft margarines have now been reformulated to eliminate those), it should still be used sparingly and strategically to add flavor, not as a default fat/oil in cooking. The same approach should hold for lard and other animal fats. Healthier choices, which can be used more liberally, include nut butters; avocados; and olive oil, canola, and other plant-based oils. Limit coconut and palm oils, monitor general use and heating of vegetable oils (including selection of appropriate types of oils for fryers), and change oils to avoid oxidation and rancidity.

MYTH: Lean beef, pork, and lamb are healthy choices. It’s only fatty red meat—from burgers to sausage—that should be avoided.

FACT: While processed meats are most frequently implicated in chronic disease patterns, liberal use of both fatty *and* lean meats should be avoided. Research suggests that saturated fat is not the only health risk associated with high meat consumption.

MYTH: Nuts are high in calories, so use and consume sparingly

FACT: Nuts are high in protein, beneficial fats, and phytochemicals. When consumed regularly (several times per week) in moderate portion sizes, nuts are not only associated with reduced

incidence of heart disease and diabetes, but also with improved weight loss, possibly because of their ability to positively impact satiety.

MYTH: We’re not getting enough dairy foods in our diets. We need to increase our consumption of low-fat milk.

FACT: Individuals should aim for an average of one to two servings of dairy per day, which is sufficient in terms of calcium intake and bone health. Surprisingly, countries that consume dairy foods generally show higher fracture rates than countries that have no tradition of consuming dairy. With reduced consumption, it’s less important to avoid full-fat dairy, especially in instances such as milk where the flavor of dairy fat is sometimes replaced by sugar (e.g., flavored milk drinks). Cheese is high in sodium and concentrated in saturated fat through the production process. It should be used in lower amounts. In recent studies, yogurt has been associated with reduced weight gain. Excessive dairy use and consumption, beyond population nutritional needs, drives up herd sizes and leads to more negative environmental impacts.

MYTH: Responsible seafood choices mean focusing on the right species.

FACT: The decline in the world’s fisheries is a result of menu and food choices that favor just a narrow handful of species, such as tuna and cod. Serving a greater variety of fish and seafood from well-managed wild fisheries and aquaculture operations is a better approach. Third-party certifications, such as the Marine Stewardship Council, Best Aquaculture Practice and Aquaculture Stewardship Council, and rating systems like the Monterey Bay Aquarium Seafood Watch program can help you select which kinds to serve.

MYTH: We need to urgently identify new, healthy protein sources to meet future environmental challenges and population demands.

FACT: Again, eating enough protein is not a major concern in the U.S., where almost every person eats more protein than needed to maintain good health. We get protein from many foods we eat, even grains and vegetables. Increasing global demand for

animal-based proteins, including pork and beef, may exceed our ability to produce enough corn, soy, and other crops used to feed animals—and will likely lead to increased deforestation and negative climate impacts. With different menu choices—including a greater focus on plant-based proteins—our current global agricultural footprint (total existing farmland) could likely produce enough protein to support future population growth.

MYTH: Vegan and vegetarian diets are the healthiest and most environmentally sustainable. Largely plant-based, flexitarian diets are half measures.

FACT: While vegan and vegetarian diets, if properly designed, can be very healthy, research indicates that diets composed mostly of plant-based foods—rich in produce, whole grains, and plant proteins and oils, with small amounts of poultry, fish, dairy, and meat—can also be optimally healthy and associated with good environmental stewardship.



IV. TOOLKIT: CULINARY AND MENU STRATEGIES

20 FLAVORS, TECHNIQUES, AND APPROACHES

QUALITY OVER QUANTITY

SIX WAYS TO SHIFT THE VALUE PROPOSITION AROUND MEAT

1. **Reduce portion sizes of beef, pork, lamb, poultry, and cheese** while increasing options for portion choices including pricing, and serve less meat overall.
2. Buy and serve small amounts of **higher quality, more flavorful meats** from producers who **avoid the use of antibiotics and allow their animals to forage and graze**.
3. **Re-imagine and redesign menus** to move customers away from focusing on protein sources as they select their menu choices, while at the same time developing narratives that maintain price points and perceptions of value.
4. **Explore shifting meat to a “supporting role,”** as a condiment that adds flavor to other ingredients.
5. **Re-imagine the “mixed grill,”** pairing small amounts of beef or pork with chicken, fish, or vegetables.
6. **Explore marketing strategies and narratives that favor clear positives** (“fresh,” “seasonal,” “farm-to-table,” “global flavors,” etc.) over menu language that could be perceived as a mix of negatives and positives (“meatless” or “healthy” or “reduced calorie”).

IT’S NOT ABOUT SACRIFICE

SEVEN WAYS TO LEVERAGE FLAVOR WHILE REDUCING MEAT

1. **Develop meat/vegetable (e.g., mushrooms) and meat/legume (e.g., chickpeas, beans) blends** to replace or complement menu favorites.
2. **Understand how to replace the savory quality of meat** with other umami and plant-based flavor strategies.
3. **Look to the new American farm-to-table cooking style** for chefs’ insights and high-flavor innovation around vegetables and vegetable-centric menu strategies.
4. **Discover plant-based culinary traditions and techniques from the Mediterranean, Asia, Latin America, and elsewhere around the world** that leverage small amounts of animal protein.
5. **Explore how techniques** often applied to cooking meat—from searing and grilling to BBQ and smoking—**can enhance plant-based proteins and other plant-based foods**.
6. **Experiment with the threshold for minimum usage of processed meats**, including bacon and sausage, which could have a positive, discernable flavor impact on select dishes.
7. **Consider occasional additions of healthy protein-centric menu items fried in healthy oils** to create a sense of small portion-sized, healthful indulgence

GET CREATIVE

SEVEN WAYS TO RETHINK ANIMAL PROTEIN AND ELEVATE PLANT PROTEIN

1. **Stay abreast of innovation in meat substitutes and other plant proteins that can minimize menu and recipe disruption.** At the same time, understand the culinary possibilities of legumes and soy foods without always trying to replicate American animal protein-centric foods.
2. **Focus egg-based menu R & D around opportunities to separate eggs from the usual context of processed meats, cheese, potatoes, and refined carbohydrates,** and instead pair them with whole grains, vegetables, and legumes.
3. **Choose seafood from well-managed and improving wild fisheries and farms, and feature mixed-species menu items** that help drive consumption of a wider range of underutilized species. Third-party certification and rating systems can help you identify better choices.
4. **Use more nuts, seeds, nut butters, and nut flours, and increase culinary literacy around their potential in professional kitchens.**
5. **Increase the use of yogurt (without added sugar), diversify uses of low- and moderate-fat dairy, and reserve small, occasional portions of full-fat/high-fat dairy for strategic menu impact.**
6. **Encourage and reward young culinary talent** for creativity and innovation around plant-based menu R & D, including moving plant protein to the center of the plate.
7. **Research and invest in kitchen and service technologies** that drive higher sensory values around the preparation of plant-based proteins and other healthy, plant-based foods.

