Purchasing Considerations

A SUPPLEMENT TO: **REDEFINING PROTEIN** - ADJUSTING DIETS TO PROTECT PUBLIC HEALTH AND CONSERVE RESOURCES

LEGUMES
NUTS AND SEEDS
EGGS
SEAFOOD
DAIRY

INTRODUCTION

New science reveals that certain dietary patterns have been noted to have the ideal composition for human health and reduced environmental impact.[1]

This guide offers procurement recommendations based on values of sustainability, nutrition, social, and animal welfare concerns. These considerations were generated based on findings detailed in *Redefining Protein: Adjusting Diets to Protect Public Health and Conserve Resources*, Health Care Without Harm's recent report that summarizes and analyzes available academic literature on the impacts of whole food protein options, with an emphasis on legumes, nuts and seeds, eggs, seafood, and dairy.

While this guide is not a prescriptive implementation resource, increasing the purchase and menuing of these high protein foods is a solid strategy to reduce meat on the menu while generating more health and environmental benefits associated with these foods. These procurement considerations will complement existing certifications and inform day to day purchasing when certifications are limited. We recommend that all purchasers consider full dietary composition to align with the benefits of a systematic Environmental Nutrition approach.

Applying the Environmental Nutrition Framework to establish your purchasing priorities

There is no one size fits all production system however, by setting your purchasing priorities and a plan that prompts growth in new markets in alignment with your values, you can assist in directing the course of food production.

Below is an example that applies the research compiled on egg production systems to a series of values. You will see that different production systems are better at addressing a particular value than others prompting the purchaser to prioritize purchasing criteria according to the values they hold in the highest degree.

- Least GHG emissions: Deep litter caged systems
- Best nutritional quality: Pasture-based grazing or fortified varieties
- Least impact on land: Battery cage systems
- Least need for inputs: Pasture-based integrated crop-hen systems
- Least need for synthetic pesticides: Organic pasture-based grazing systems
- Best impact on biodiversity: Pasture-based grazing systems
- Best farm viability: Comparable for caged and pastured systems
- Best for farm worker health: Pasture-based systems
- Best for animal (hen) health: Pasture-based systems with the exception of increased risk of higher disease instance

Applying EN approach prioritizes purchases with the least human, environmental, and social impacts collectively. In considering the above information for eggs; pasture-based organic eggs from an integrated farming system has the best impact when balancing all aspects. While there are occasions when the optimal criteria may not be feasible considering available supply and the scale required for institutional purchasing, decisions can be made to move the system towards this model through the development of a food purchasing timeline that evolves as the supply develops.

Sample Timeline:

- Year 1: prioritize cage free as a baseline for all purchases. Seek out suppliers using a pasture-based system and allocate 5% of egg purchases to support the growth of their supply.
- Years 2-3: Increase percentage of egg purchases incrementally each year from pasture-based systems and seek out those using an integrative farming model.
- Year 4: Re-evaluate the marketplace and available supply to establish next three-year benchmarks.

1 http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0165797

LEGUMES (SOYBEANS AND PULSES)

Health care facilities should work to increase their offerings of legumes as both meal components and snacks, emphasizing foods prepared with minimally processed legumes.

Compared to other food groups, legumes generally have the lowest environmental impacts associated with their production across indicators, including greenhouse gas (GHG), land, and water footprints, and—with the exception of soybeans—pesticide and fertilizer use. They also have relatively few social justice concerns directly associated with their production.

Emphasis should be placed on purchasing whole pulses (e.g., dry beans, lentils) and soybeans (e.g., edamame, tempeh, full-fat soymilk and tofu) when possible rather than foods that have been made from processed legume proteins (e.g., processed meat analogs, energy bars, and low-fat plant-based milks made from soy or pea protein isolate or concentrate or textured soy protein). Compared to their whole counterparts, these highly processed varieties have fewer health benefits, higher environmental footprints associated with their processing, and more sodium and additives including artificial flavors, gums, colorings, and preservatives. In the case utilizing raw beans is not feasible, canned varies may be considered with adequate rinsing prior to use.

KEY CONSIDERATIONS

Nutrition

Pulses are rich in fiber and protein, and have high levels of minerals including iron, zinc, magnesium, and potassium as well as folate and other B-vitamins. Pulses are quite low in fat and relatively low in caloric density. Although they have a fairly high carbohydrate content (50%-65%), they maintain a lower glycemic index depending upon the the level of cooking and processing. Cooking and sprouting improves the digestibility. Regular consumption of pulses has been associated with various health benefits, including decreased risk of cardiovascular disease, diabetes, obesity, and colorectal cancer. Moderate consumption (e.g., 1-2 servings/day) of whole soy foods (e.g., edamame, tofu, tempeh, full-fat soymilk) has been associated with cardiovascular benefits. In particular, avoid processed products such as veggie burgers that have been processed with hexane, a known neurotoxin.

Sustainability

Consider seeking out legumes (especially pulses) grown domestically to support U.S. farmers who are incorporating more soil-replenishing crop rotations into their practices. Facilities located in the Northern Plains states, Upper Midwest, and Northwest regions may consider developing relationships with regional farmers directly and perhaps procure rarer (heirloom) varieties of pulses to support agrobiodiversity. Particular attention should be paid to the production practices of whole soybeans considering the widespread use of genetically modified (GM) varieties which have been linked to the increased use of pesticides in production.

Social

Some varieties of imported legumes may be purchased through fair trade certifications to support small producers, workers, and communities in exporting countries.

The Cornucopia Institute maintains a list U.S. companies that produce soy products outlining their organic sourcing practices, ownership structure, relationships with farmers, use of artificial flavors, and GM contamination:

www.cornucopia.org/soysurvey

*We recommend you reference our guidance and sample on how to **APPLY THE ENVIRONMENTAL NUTRITION FRAMEWORK TO YOUR PURCHASING** to outline purchasing priorities that align with your values.*

NUTS AND SEEDS

Health care facilities should consider serving nuts as a snack or as an accent to a recipe as opposed to the main component of a meal. Moreover, high prevalence of nut allergies should be taken into consideration in the health care environment. Seeds may be a healthy and environmentally sustainable alternative. When possible, choose nuts and seeds that have been grown without the use of synthetic pesticides and promote safe, healthy working conditions. Consider incorporating nuts and seeds with fewer environmental and social justice concerns associated with their production including peanuts and pecans and other seeds (e.g., sunflower, flax, pepita/pumpkin, and hemp).

Regular consumption of nuts and seeds has been associated with a reduced risk for certain chronic diseases. Due to their caloric density, and the numerous environmental and social justice concerns associated with further increasing their production, however, nuts should be consumed in moderation.

KEY CONSIDERATIONS

Nutrition

Although nuts are high in dietary fat, it is primarily unsaturated fatty acids and monounsaturated fat which is essential to healthy body function. Described as a "heart healthy" food due to their protective effects against chronic diseases coronary heart disease and diabetes, nuts are rich in macronutrients such as protein and fiber, as well as potassium, calcium, iron, phosphorus, zinc, copper, and thiamin. Certain nuts and seeds including walnuts, flax, chia, and hemp seeds are also notably high in the omega-3 fatty acid, ALA.[iv] Additionally, nuts are an efficient way of reaching adequate intake of vitamin E and magnesium, for which the majority of Americans do not meet the recommendations. Sunflower seed butter is also an excellent source of magnesium, phosphorus, copper, manganese, and selenium, and a good source of protein, zinc, and niacin. [i] Tahini, a paste made from sesame seeds, is also rich in nutrients including niacin, thiamin, calcium (particularly in unhulled tahini), iron, and phosphorus, though it is typically not consumed in similar recipes as other nut or seed butters.

Product Specific Considerations

- *Hemp seeds, Flax seeds:* Store refrigerated to preserve omega-3 fatty acids and grind before serving to make omega-3 fatty acids available for absorption during digestion.
- *Peanuts:* Store peanuts and fresh peanut butters in dry, cool conditions to prevent fungal growth and reduce risk for aflatoxin exposure, a family of natural toxins produced by a certain species of mold in warm, humid conditions

Sustainability

Existing studies indicated that nuts require relatively high amounts of pesticide and fertilizer inputs. Thus, choosing organically produced nuts when possible may help reduce pressure for these inputs and their associated impacts on farmworker health and safety, biodiversity, and pollinator health. Considering the notable water use associated with nut production, effort should be taken to avoid increasing demand for nuts from drought ridden regions such as California, which currently supplies nearly 100% of the country's almonds, pistachios, and walnuts.

Product Specific Considerations

- *Almonds, Walnuts, Pistachios:* Minimize procuring additional amounts beyond current levels to limit additional pressures on Californian agricultural production system.

Social

For nuts and seeds imported from other countries, prioritize fair trade products to ensure that producers receive fair compensation. Although these premiums are not always passed on to their workers or communities and do not necessary mitigate trade inequities associated with export agriculture, it is the most promising way to support small producers and workers. Currently only a few of the international fair trade certifications include nuts and seeds, and no equivalent fair labor standards exist for those that are domestically grown.

Product Specific Considerations

- *Cashews, Chia seeds, Sesame seeds:* Labor practices required to process cashews pose social justice concerns with importing cashews from Vietnam and India, while importing chia seeds from South America has raised concerns about outpricing indigenous consumers. Minimize procuring additional amounts, but if purchasing, identify those with fair labor practices

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EGGS

Health care facilities should consider purchasing eggs from free-range or pasture-based systems and regional suppliers directly to support the regional economy and reduce the reliance on eggs raised in environments associated with social justice and animal welfare concerns.

Recent science reveals that moderate whole egg consumption is not likely to lead to an increased risk for cardiovascular disease and mortality for the general population. Eggs have low environmental impacts associated with their production compared to other animal products.

KEY CONSIDERATIONS

Nutrition

Eggs contain a number of important nutrients, including choline, selenium, biotin, B vitamins (including B12), iodine, molybdenum, and omega-3 fatty acids. While the egg white contains most of the protein found in an egg, the yolk contains most of its other key nutrients, including omega-3 fatty acids; fat-soluble vitamins A, D, E, and K; carotenoids, most other B vitamins, and choline. Choline is critical for preventing liver disease, atherosclerosis, and possibly neurological disorders, and egg yolks are the most concentrated source of the nutrient in American diets. The nutrients found in an egg vary based on the feed consumed by the hen. Farmers are increasing the omega-3 fatty acid content in eggs through providing access to pasture, enrichments of flaxseed, fish oil or microalgae in hen feed.

Sustainability

Layer hens depend on feed comprised solely of corn and soy and thus producing their feed contributes to the increasing use of pesticides.Choosing organic varieties can alleviate this concern. Integrated crop-chicken systems can offer benefits such as crop pest control, even distribution of manure, and decreased need for inputs including feed, fertilizer, and pesticides.

Social

Eggs are produced in a number of different housing systems. The vast majority (94%) in the U.S. are produced in battery cages, which prevent hens from performing natural behaviors including perching, nesting, foraging and even spreading their wings. Conventional battery cage operations house hundreds of thousands of birds in one facility. The intensification of the egg industry over the past half-century has elevated animal welfare concerns. Increasingly, many operations are transitioning to housing systems which offer more space for hens. These include (from lowest to highest standards) enriched colony cages, cage-free, free-range, and pasture-raised operations

While no fair labor standards currently exist for workers in hen operations, different production systems used to raise laying hens have varying impacts for farmers, farmworkers, and surrounding communities.

Workers in in poorly ventilated barns or aviary houses are exposed to significantly higher concentrations of airborne particles, ammonia, and endotoxin, which pose respiratory health risks for workers and in some cases, nearby residents. Free-range and or pasture-raised operations alleviate air quality concerns.

The Cornucopia Institute maintains a list of organic egg producers, evaluated for their ownership structure, average flock size, organic practices, hens' indoor and outdoor living conditions, manure handling system, feed ingredients, and more:

www.cornucopia.org/organic-egg-scorecard

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SEAFOOD

Health care facilities should purchase a wide variety of seasonally available fish to utilize the species that are available in domestic waters and encourage a shift in the U.S. seafood market towards serving our domestic needs. Seek out mollusks (clams, mussels, oysters, scallops) and small forage fish (herring, sardines and anchovies) which have particularly low and sometimes beneficial ecological footprints. ***For those not located in a coastal community, you may consider incorporating protein products other than seafood to emphasize the use of items available more readily in your geographic region.***

Health care facilities play an important role in shaping the types, amounts, and preparation styles of fish that people consume. The lack of transparency along with the immense diversity and range of health, environmental, and social justice factors to consider when purchasing fish and shellfish make it a particularly difficult food group to navigate. In general, 'know your fishermen"* or at least 'know your fish'.

Ninety percent of the fish Americans consume (by edible weight) is imported, including domestic varieties processed overseas. The United States exports much of its highest quality, wild fish to other countries, and imports mostly farm-raised fish, both for cheaper prices and to satisfy the limited palate of American consumers.] Less than 2% of imported seafood is inspected, raising concerns about the traceability of production, harvesting, labor, and food safety practices.

*We use fisherman/men in this document as a gender-neutral term to describe a person or people who fish. We considered using "fisher," however we received feedback from fishing communities that fisherman is the preferred term among females who fish.

KEY CONSIDERATIONS

Nutrition

Most fish and shellfish are a good sources of protein, selenium, vitamins D and B12, taurine, choline, and iodine. Dietary patterns incorporating regular fish consumption have been associated with a reduced risk of cardiovascular disease in adults and improved cognitive development in infants and young children. To achieve many of the health benefits associated with fish, the 2015 Dietary Guidelines for Americans recommend that the general population consumes at least 8 oz. (2 servings) of a variety of fish and shellfish per week, including some fatty fish, which contain higher levels of omega-3 fatty acids. Some canned seafood (e.g., anchovies) may be high in sodium, so health experts recommend checking nutrient labels to choose lower-sodium options. The nutrient profile of farmed fish, varies greatly based on the predatory status of the fish species and feed ingredients.

Pollutants from human industrial activities and agricultural pesticides often end up in streams, rivers, and oceans, causing heavy metals (e.g., mercury, cadmium, lead) and persistent organic pollutants (e.g., DDT, PCBs, dioxin, and some flame retardants) to accumulate in the tissues of seafood species. Contaminants accumulate most heavily in older, larger, predatory fish, so eating fish lower on the food chain (e.g., small forage fish like herring, sardines and anchovies) is an important way to limit exposure. As with other foods, experts also recommend eating a diversity of seafood to reduce contamination from a single source.

Despite the risks associated with consuming fish from any source, experts agree that in general, the benefits of fish consumption still outweigh the potential health risks from contaminants, but consumers should be aware of fish advisories available nationally. Even for the most at-risk consumers – pregnant or lactating women and young children – the FDA and EPA recommend a minimum of 8 oz. and maximum of 12 oz. of fish consumption per week, though they are encouraged to avoid fish with the highest levels of methyl mercury contamination: shark, swordfish, king mackerel, and tilefish.

Choosing Seafood for Health Care

A white paper exploring issues of sustainability in the seafood industry and how hospital purchasers can support practices that the protect the health of individuals, communities, and the environment.

www.noharm.org/seafoodguide

Sustainability

Moreover, there is not enough fish for everyone globally to consume as recommended for health benefits, even including the growth of aquaculture. Aquaculture systems do not mitigate challenges associated with declining wild stocks

and marine biodiversity, due to additional environmental impacts with their dependence on marine and terrestrial food supplies.

A growing area of concern related to the aquaculture industry relates to its contributions to antibiotic resistance. Many countries from which the United States imports farmed seafood (predominantly from Asia) add antibiotics to fish baths and feed to prevent disease. Most aquaculture operations in the United States rely on vaccines to prevent disease rather than antibiotics. Thus, in the United States, medically important antibiotics are only used in aquaculture operations to treat diseases for which there is no vaccine. Given the ease with which antibiotics and resistant genes can spread through water, even low and legal levels of antibiotics used in domestic aquaculture operations can significantly contribute to the problem.

Fish transported by air can have significantly high GHG footprints. For those in landlocked communities, tilapia grown in an aquaculture environment may be considered if part of a closed loop aquaculture system, however this may be challenging to identify upon order as no current label exists.

Social

When incorporating more seafood into your menu, prioritize domestic wild caught options when possible. This will provide the best information on the production and origin of the product as well as the use of chemicals, antibiotics, and labor involved in the harvesting. If your budget allows, consider allocating a portion of your purchase to items purchased directly from a local fishing cooperative where you can ensure the traceability of the fish and the highest return for the community fisherman rather than an industrialized fleet, thereby supporting a diversification of the market. Domestic label certifications indicating local or community owned fisheries do not currently exist so you will need to seek this information out from supplier directly.

Product Specific Considerations

There is great variability and uncertainty in asserting definitive species by species recommendations due to the ongoing shifts in seafood stocks, this is why we primarily recommend domestic, seasonal, and underutilized varieties.

Additional high level recommendations per species include:

- Shellfish/Mollusks
  - *Shrimp and prawns:* When purchasing, prioritize chemical-free domestically farmed varieties but aim to seek out other fish species which are less energy-intensive and require high-protein feed.
  - *Clams, mussels, oysters, scallops:* These are among most sustainable seafood options. Some varieties (e.g., Pacific oysters, mussels) are also high in omega-3 fatty acids.
  - *Lobster:* Avoid lobster caught by bottom trawling, which has a particularly high GHG footprint and depletes marine biodiversity.
- Finfish
  - *Small forage fish (herring, sardines, anchovies):* Forage fish are high in omega-3 fatty acids and when harvested responsibly, among most sustainable seafood options. When purchasing canned, choose lower-sodium varieties.
  - *Mackerel:* Mackerel is a good source of omega-3 fatty acids. Can have low GHG footprint but avoid longline harvested varieties.
  - *Salmon:* Salmon is a good source of omega-3 fatty acids. Prioritize wild caught varieties from Alaska but pursue other local fish first if it would need to be air-freighted to reach you.
  - *Shark:* Avoid most species.
  - *Trout:* Trout is a good source of omega-3 fatty acids. Choose wild varieties harvested by troll poles rather than trap nets.
  - *White fish (cod, haddock, pollock, flatfish, tilapia, etc.):* Seek out a variety of species available. Avoid fish caught by bottom trawling.

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DAIRY (COW MILK) AND PLANT-BASED ALTERNATIVES

Health care facilities should prioritize purchases from regional, operator-owned businesses when choosing cow's milk dairy and from operations where cows are raised on pasture where possible. If offering plant-based alternatives, limit those derived from almonds or cashews and prioritize organic soy varieties.

Cow's milk dairy products (particularly milk and yogurt) provide a number of key nutrients. Moderate consumption has been associated with a reduced risk for certain diseases, however, the health impacts of dairy products have also been the source of controversy. Also, given the recent proliferation of plant-based alternatives to milk (e.g., beverages made from almonds, soy, coconut, etc.), research available on such products was also considered with the exception of grain-derived varieties. With the exception of soy milk, these products do not contain similar nutritional profiles to cow's milk but are included because they are increasingly replacing cow's milk as meal components.

The ecological impacts of dairy products are relatively low compared to other food groups, but many dairy farms still appreciably contribute to ecological, public health, and animal welfare concerns, depending on their location and size. Based on the limited research available thus far, plant-based alternatives have significantly lower impacts on most environmental, social justice, and animal welfare metrics per serving than cow's milk, with a few exceptions.

KEY CONSIDERATIONS

Nutrition

Full-fat grass-fed cow's milk dairy offers higher (though relatively low compared to fish) concentrations of beneficial fatty acids including omega-3s than conventional cow's milk dairy products. When purchasing low-fat cow's milk varieties, avoid products high in sugar such as flavored milks. For plant-based milk alternatives,choose calcium-fortified varieties and lower-sugar options for maximum health benefits. Shake hard before serving to ensure that calcium distributes evenly.

Sustainability

While some efficiencies have been made in producing cow's milk dairy over the last two decades to reduce climate, land and water footprints of dairy products on a per serving basis, it is best to limit purchase of products from large-scale dairy operations where concerns include: nitrate leaching and contamination of drinking water, antibiotic resistant bacteria development, and adverse worker and community physical, mental, and social health impacts. More specifically, limit purchase of products from large-scale dairy operations in Central California and other drought ridden areas that rely largely on delivered water in order to reduce the environmental pressures (most notably, water use) from the production system. Procuring dairy from less intensive (e.g. pasture-based) operations might reduce some of these harms, though not necessarily ecological footprints.

When selecting plant-based milks, limit almond milk procurement to avoid increasing demands for almonds due to pressure on California production system and prioritize organic soy milk to reduce pesticide use in production.

Social

Work with your suppliers to seek out dairy products from regional small and mid-sized farms (<999 cows) rather than consolidated industrial farms to support a diversification of the market. Prioritize purchasing from operator owned businesses. Avoid procurement of cashew milk as no variety is made with fair trade cashews.

The Cornucopia Institute maintains a rating list of organic dairy farms based on the ownership structure, certification standards, pasture grazing practices, antibiotic and reproductive hormone use:

www.cornucopia.org/dairysurvey

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