

Soy: Setting the Story Straight

Supermarket RD Symposium
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Soy, one of nature's most perfect foods, is one of the most misunderstood foods of our age.



Google Search: “Soy Dangers”
yields 1,200,000 results

Google™

Soy dangers

Google Search

I'm Feeling Lucky



Dr. Oz Show

“The number one thing: Avoid processed, ‘convenient’ soy, it’s problematic for your own estrogen sensitivity,” said Alisa Vitti, Integrative Nutritionist, on the Dr. Oz Show.



“Soy’s Negative Effects: Is This the Most Dangerous Food for Men?” *Men’s Health*

“The unassuming soybean has silently infiltrated the American diet as what might just be the perfect protein source: It's cheap and vegetarian, and could even unclog our hearts. But there may be a hidden dark side to soy, one that has the power to undermine everything it means to be male.”



“Soy Infant Formula: Birth Control Pills for Babies.” The Weston A. Price Foundation

“The average amount taken in by a child on soy-based formula provides the estrogenic equivalent of at least 4 birth control pills. Because babies are more vulnerable than adults to the effects of dietary estrogens, the effects could actually be much greater than that of 4 birth control pills.”



The Simple Truth About Soy

- Soy is a traditional whole plant food, with a long history of healthful use.
- First cultivated in China in 1100 BC, soy has been consumed regularly in Asian populations for centuries. In Japan—a country with low breast and prostate cancer rates and high life longevity—it is included in the diet daily.
- Vegetarians have relied on this high quality protein for decades; and they have lower rates of many chronic diseases.



The Simple Truth About Soy

- Soy is one of the most widely studied foods of all time.
- It's a near perfect food (1 cup cooked soybeans):
 - 57% DV protein
 - 41% DV fiber
 - 49% DV iron
 - 18% DV calcium
 - 1,029 mg omega-3s
 - $\geq 18\%$ DV of twelve other essential vitamins and minerals
 - phytochemicals (saponins, phytosterols, isoflavones, etc)
- Body of scientific research shows soy is linked with reduced cholesterol, lower risk of heart disease, possible reduction of hot flashes, and reduced risk of breast and prostate cancer.



Soy Myth Busters

Let's take on some of today's top myths feeding into the fear of consuming soy.



Soy Does Not Cause Breast Cancer, and is Safe for Breast Cancer Survivors



Soy Does Not Cause Breast Cancer

- Confusion over phytoestrogens and past research led to breast cancer fears among general consumers and health care professionals.
- Estrogen linked with increased risk of breast cancer; estrogen receptors in breast tissue, estrogen snaps in, promotes breast tumors.
- In 1990s, researchers raised questions about soy and phytoestrogens through animal experiments done, which showed mixed results. **Phytoestrogens are not estrogen.** Now we know that phytoestrogens act very differently in humans than does estrogen.
- Isoflavones can block more potent natural estrogens from binding to estrogen receptor, stop formation of estrogens in fat tissue, stimulate production of a protein that binds estrogen in blood.

(ACS)



Soy Does Not Cause Breast Cancer

- Whole soy foods: anti-inflammatory, antioxidant properties reduce cancer growth. (*ACS*)
- Isoflavones may play role in reducing cancer risk; laboratory, animal, human observational studies suggest soy may reduce risk of cancers, including breast, prostate, ovarian, and uterine. Large studies in women with high soyfood intake show lower risk of breast and endometrial cancer, but many possible explanations other than soy. (*ACS*)
- Recent study with data from 14 studies found that women in Asian countries who ate the most soy isoflavones had 24% lower risk of breast cancer, no association in US. (***Breast Cancer Res Treat***, 2011)
- Cancer protection needs to be confirmed in human clinical trials. Human studies sponsored by NCI under way.



Soy Does Not Cause Breast Cancer



- Some studies suggest effect of soy on breast cancer risk depends on age when consumed. High soy intake by young women when breast tissue developing and estrogen levels are high may offer protection.
- Bottomline: Now we have 5 population studies and 1 major analysis of several studies showing soy had either decreased risk or no effect on estrogen receptor-positive breast cancer risk. (*AICR*)
- *AICR* position: Soy foods are safe—even for breast cancer survivors—in moderate amounts: one to two (some studies show even up to 3) servings per day.
- *ACS* position: Moderate consumption is safe for cancer prevention and breast cancer survivors; although they recommend whole soyfoods over supplements.

Whole Soy Foods Guide

One serving of soy averages 7 g protein and 25 mg isoflavones.



Soy Foods	Protein	Description	Culinary Use
Edamame, cooked, shelled, 1/2 c	9	Large soybeans harvested while they are sweet and green.	Boil or steam them whole and remove from pod to enjoy as a snack or appetizer; add shelled edamame to stir-fries, soups, salads, entrees; use pureed as dips
Soymilk, 1c	5-9	Cow's milk alternative made from soaked, dried soybeans that are ground and strained; has a creamy, mildly nutty taste. Available in a variety of flavors, including vanilla and chocolate, and in unsweetened, sweetened, reduced-fat and organic varieties.	Use wherever you use dairy milk; in coffee, cereals, and smoothies; or in baking or cooking
Soybeans, cooked, 1/2 c	15	Whole, dried soybeans that are rehydrated and cooked.	Add to salads, soups, side dishes, and stews in place of beans.

Soy Foods	Protein (g)	Description	Culinary Use
Soynuts, ¼ cup	11	Made of whole soybeans soaked in water and baked. Taste similar to peanuts, may be ground into soy nut butter.	Eat as a snack; add as an ingredient in granola, cookies, breads, salads and stir-fries. Use soy nut butter on breads and in cooking in place of peanut butter.
Soy-based Meat Alternatives, ½ c or 2-oz	5-22	Ready-to-eat meat alternatives in forms such as crumbles, burgers, and sausages that are based on a variety of soy ingredients, which may include tofu, textured soy protein, and soy protein isolate, and soy protein concentrate.	Add crumbles to casseroles, side dishes, tacos, and entrees; serve burgers and sausages in sandwich
Tempeh, 3 oz	13	Soybeans are combined with grains and fermented in this traditional Indonesian product.	Slice into stir-fries, curry dishes, soups, salads, and side-dishes. Great to use on a sandwich.
Tofu, 3 oz	8 (average)	Soft, cheese-like product created by curdling fresh soymilk with a coagulant. Available in a variety of textures, including silken, soft, firm, and extra firm, tofu has a very mild flavor that is accentuated with other ingredients.	Dice firm or extra-firm tofu into stir-fries, curry dishes, vegetable dishes and side dishes; or marinate and grill. Use soft or silken tofu in sauces, dips, smoothies and baked goods.

Soy *is* Sustainable



Soy *is* Sustainable

- Debate on GMOs and modern farming impacts soy's reputation among consumers. But most soyfoods are non-GMO, including soymilk and dairy alternatives, tofu, tempeh, and edamame.
- The U.S. Dept of Commerce calculates U.S. production of soy protein for human consumption slightly less than 1% total soybean production; rest going primarily to animal feed.

(Not including whole non-GMO soybeans used in production of soymilk, tofu, and other products such as edamame, as this data is not collected.)



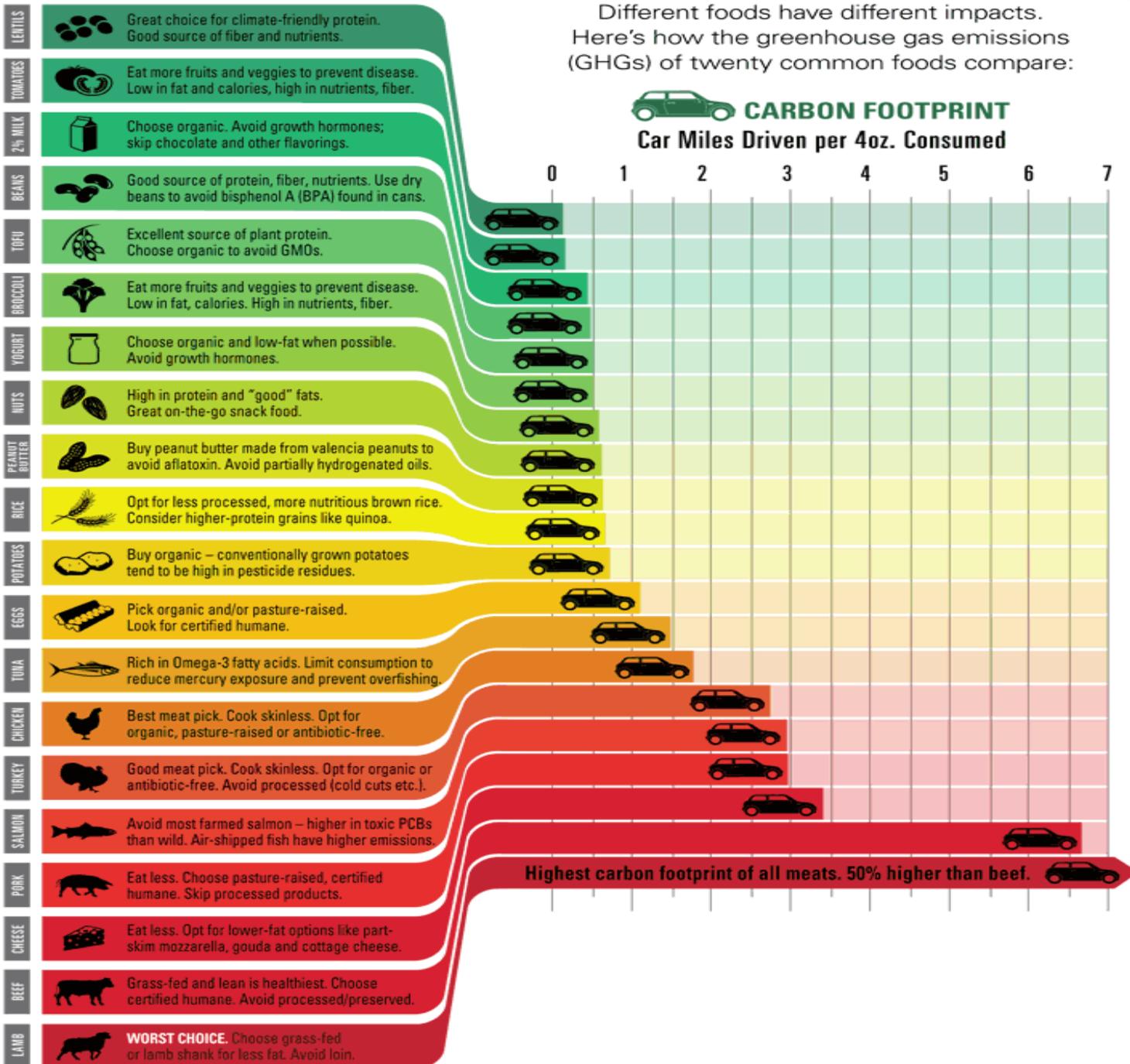
Plant-based diets are more sustainable



- AHS-2 found vegan carbon footprint 42% lower than non-vegetarians, vegetarian 28% lower, pescovegetarian 24% lower, semi-vegetarian about 20% lower.
- EWG Meat Eater's Guide: compared 20 different foods; tofu much lower impact on GGEs than other animal proteins, such as lamb and beef.
- You can either eat protein foods directly or indirectly in animals, and animals are inefficient protein producers.
- Soy is more efficiently produced in terms of energy, water and land use, than animal protein (*AJCN*, 2003)

Different foods have different impacts. Here's how the greenhouse gas emissions (GHGs) of twenty common foods compare:

 **CARBON FOOTPRINT**
Car Miles Driven per 4oz. Consumed



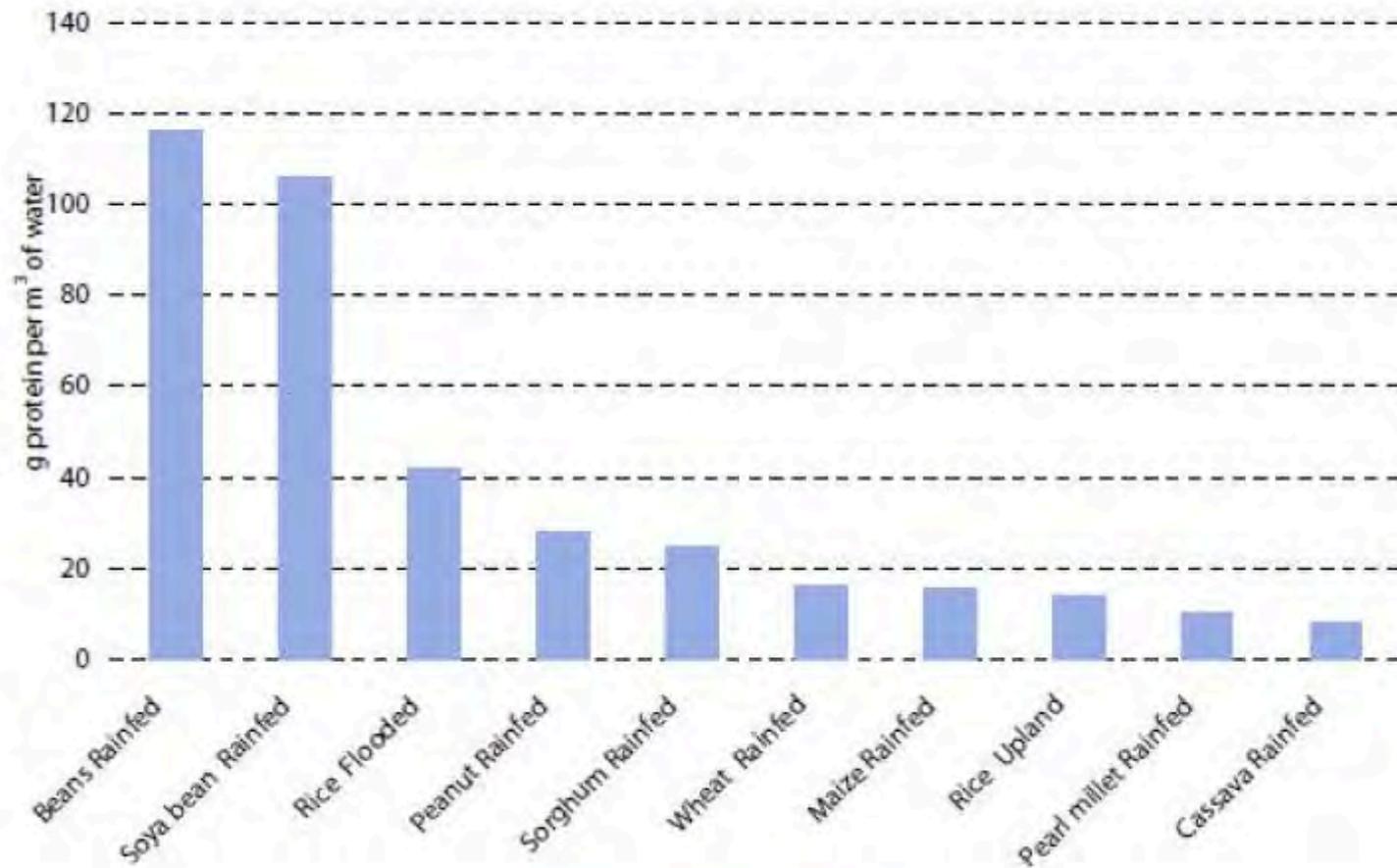
Highest carbon footprint of all meats. 50% higher than beef.

Soy is *Good* for the Planet

- As freshwater resources become strained and food production becomes compromised, production of foods will be measured by volume of water needed to produce high-quality protein. Soybeans are more efficient protein source per cubic meter of water used in production.
- Considering the amount of fossil energy inputs (such as fuel, fertilizer, pesticides, transportation) required to produce soybeans, soy-based foods deliver the largest number of calories and highest protein density for human consumption per amount of fossil fuel input.

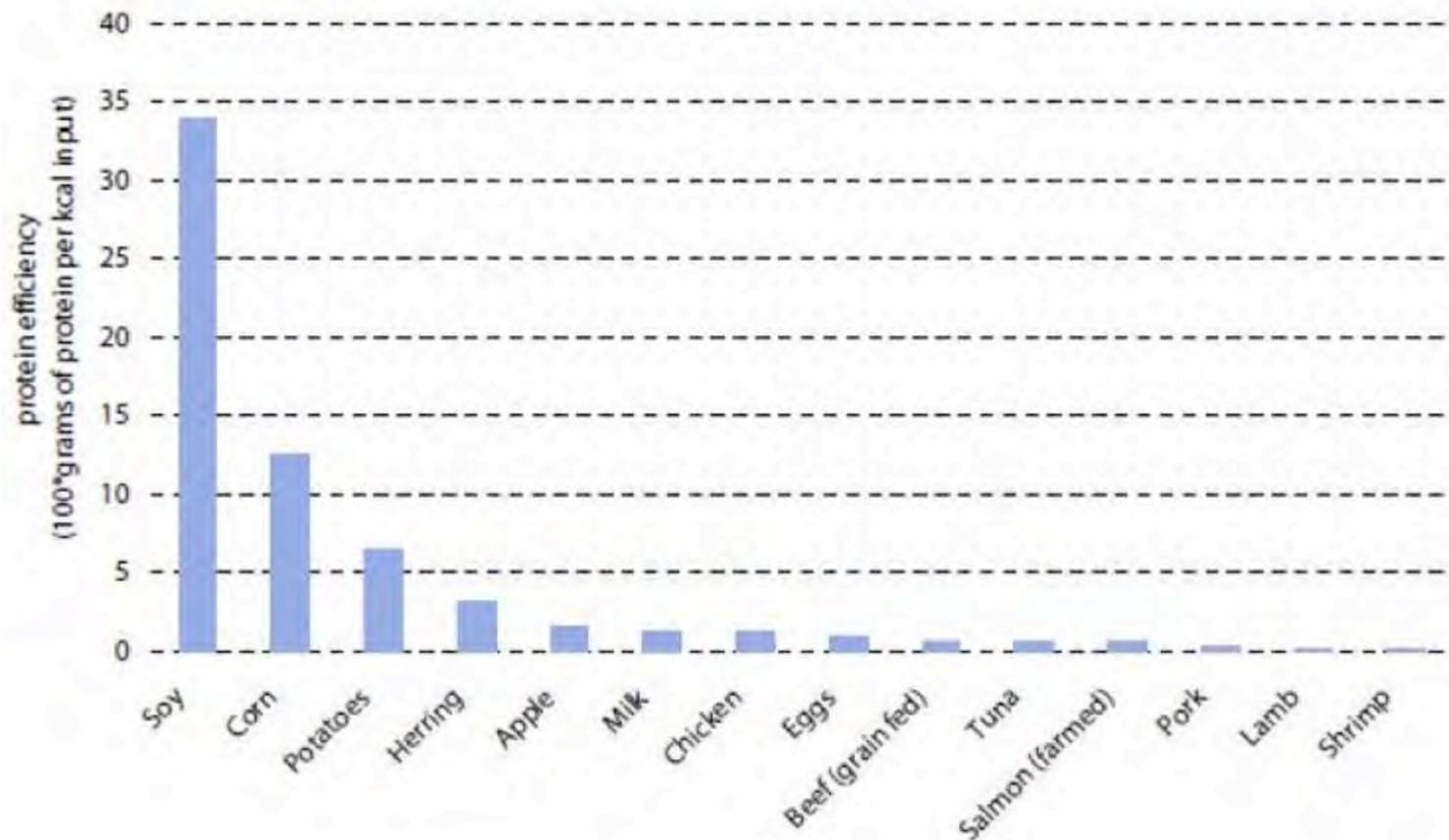


Water efficiencies for protein, grams of protein per m³ of water



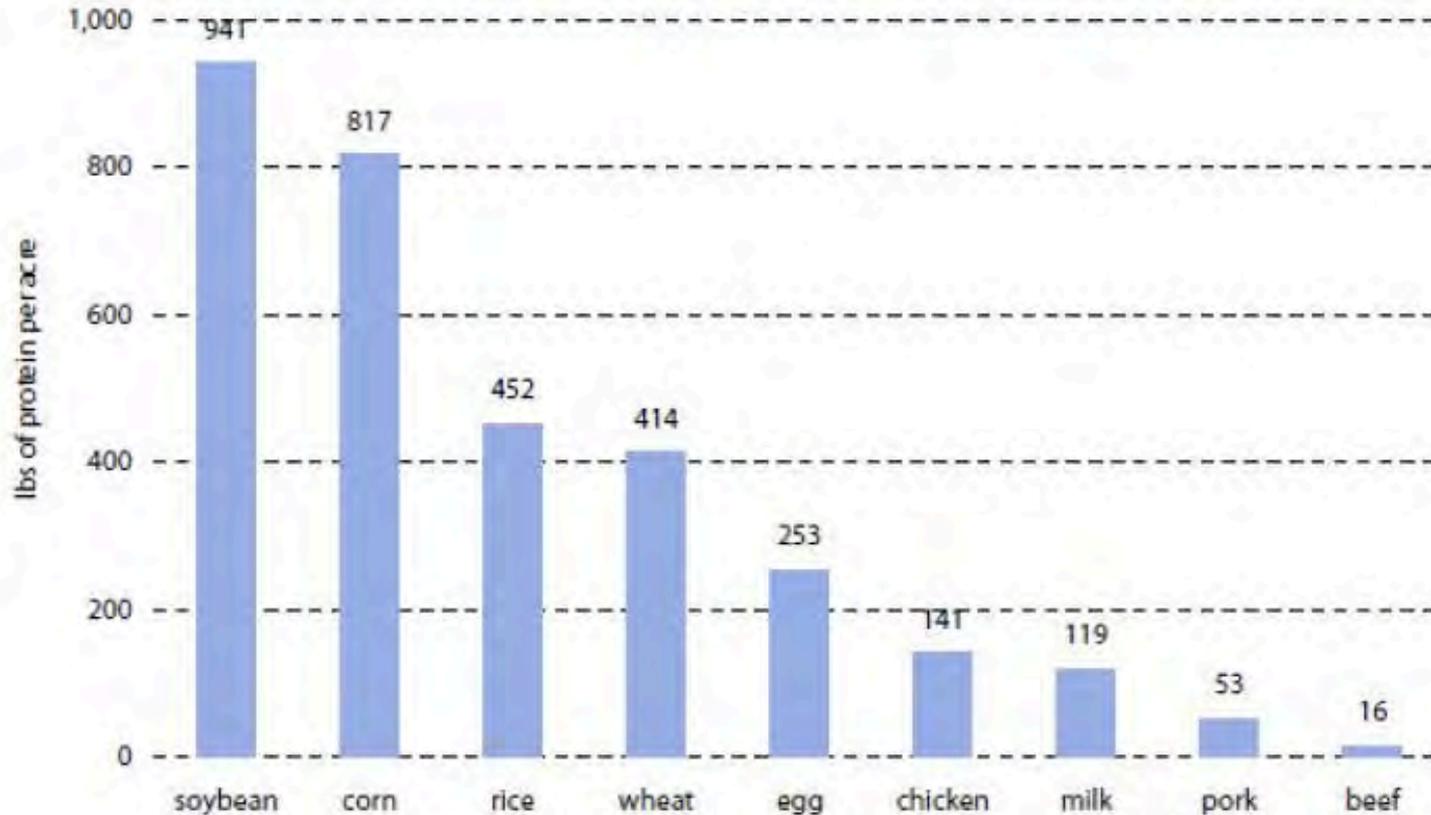
Source: Brummet (2007)

Energetic efficiencies of representative food items (protein output per energy input)



Source: Eshel and Martin (2006)

Pounds of protein produced per acre of land in the US – LMC estimates



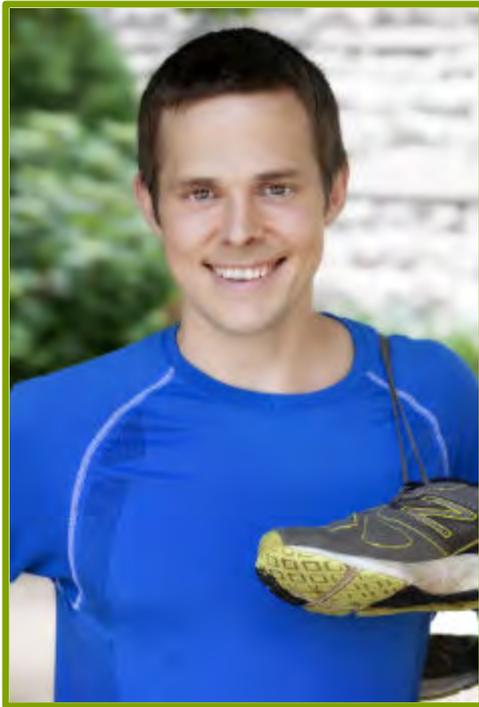
Source: LMC estimates based on USDA reported yields and conversations with USDA subject specialists.

Protein contents were derived by LMC from the ARS nutrient database —

http://www.ars.usda.gov/main/site_main.htm?modecode=12-35-45-00

Note: Livestock efficiencies vary drastically in accordance with production practices.

Soy does not Feminize Men



Soy *does not* Feminize Men



- Numerous human studies show men consuming 40 - 70 mg/day soy isoflavones from 1 - 2 servings of soyfoods or soy supplements had no significant changes in testosterone levels.
(*Fertil Steril*, 2010)
- Some animal studies showed concerns, but animals were fed extremely high levels of isoflavones not possible in average American diet.
- Populations consuming high amount of soyfoods do not show increased rates of fertility issues.
- Analysis of 14 studies showed increased soy intake resulted in 26% reduction in prostate cancer risk.
(*AJCN*, 2009)

Soy *is* Safe for Children



Soy *is* Safe for Children

- No obvious harmful effects—children have been consuming soy products in Asia safely for centuries.
- Recommended safe dose for children up to two servings per day of whole foods.
- Beginnings Study: long term study of 600 children (3 mo – 14 yr), Arkansas Children’s Nutrition Center, comparing breast milk to soy and dairy formulas. Soy formula-fed kids developed at similar rates, and had no estrogenic effects during development of reproductive organs during first 4 months.
- Soy is on the Top 8 Food Allergen list, however allergies are still relatively rare; only 0.4% of all children under age of 18 are allergic. Allergic response not fatal like peanuts.



Enjoy Soy!



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Enjoy Soy!



Silk

Thank You!



Silk

Soyfoods Association of North
America

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