1

Learning objectives

1	Understand how our food system has developed, and why a transformation is necessary for ensuring long-term sustainability.
2	Recall the major environmental impacts related to the global food system.
3	Identify three reasons why an understanding of sustainable food systems is within dietitian's scope of practice.

2

We Have a Responsibility, to People and the Planet

- As dietitians, we care deeply about nourishing people.
- But we can't take care of people, without caring for the planet and ensuring an adequate access of safe, healthy food for all.
- The planet is getting hotter and more crowded.
- How are we going to feed an increasing population without destroying our natural resources: land, water, air, soil, wildlife?
- Increasingly, we are learning that what you put on your plate can be the most significant impact an individual can make over their lifetime.
- Dietitians are instrumental in helping the public shift their diets to a more sustainable eating pattern.

The time is *now*.

3

Dramatic Changes in our Food System

- Over the past 50-60 years, we've had dramatic changes in agriculture, which directly impacted dietary patterns.
- Shifted to producing cheap staple foods.
- As we prospered, so did our food system, continuing its arc of modernization.
- Yet, we aren't any healthier, obesity and chronic disease risks soared during this period. (BMJ, 2018)

Palmer Family Farm, early 20th Century, Spokane, Washington

4

A Story of Farming in the Past

- My mother grew up on a family farm in Arkansas during WW2.
- My father grew up on a family farm in Minnesota during WW2.

Palmer family farms

5

Farming Today

- Agriculture is increasingly efficient, allowing us to spend a smaller share of our income on food (about 10%).
- Since 1900, number of farms has fallen by 63%, average farm size risen by 67%.
- Increasingly specialized, from an avg of five commodities per farm to one. (USDA, 2006).
- Food systems are more vertically integrated, from genetics to production to retail to your plate.
- Green Revolution: higher technology, higher yields, and unintended consequences.
- 75% of world's food comes from only 12 plants, fewer than 5 animal species, yet we could be consuming 10,000 plant species, 2500 animal species, greater diversity of fungi and algae (Frontiers in Sustainable Food Production, Health and Climate Change, 2018).

California farm, Sharon Palmer

6

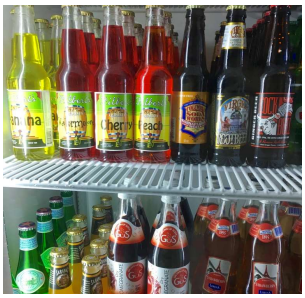
Welcome to the Western Diet

- Our food system evolved to create the Western diet, with its trio of issues: health, environment and agriculture.
- Western diet relies on lower variety and ag methods that negatively impact ecosystems, use fossil fuels, increase GHGe, speed up land-use conversion.
- Other dietary patterns, such as plant-based and Mediterranean, have lower impacts.
- Importing the Western diet around the world
- Sadly, 815 M people around world are suffering from chronic malnourishment; and 11% of US households are food insecure. (FAO, 2013)

7

Unsustainable Eating for Human Health

- 33% calories in US diet junk food.
- 75% of foods and beverages in US have added sugars, 13% daily calories come from sugars (NCHS Brief)
- In 1955, 25% of food dollars were from restaurant foods; now it's 48% (NRA, 2017).
- 60% of calories from grocery stores is highly processed food (FASEB, 2015)
- Avg American spends $1,200 per year on fast food; avg family eats 150 x/yr (Visual Capitalist, 2019).
- 90% people say they don't cook (USA Today, 2017)
- Average time spent on social media 2 hours per day (Statista).
- Increasingly urbanized, removed from our food system.



Sugary beverages, Sharon Palmer

8

A Product of Food Policy

- US food system is product of ag policy.
- Tax payers spend billions on farm subsidies and food policies.
- Shapes farmer's choices.
- Encourages farming practices that pollute.
- Growing larger, more specialized commodity crops.
- Farm subsidies favor commodity crops, even when prices drop.
- Subsidizes five crops: corn, soybeans, wheat, cotton, rice—providing 80% of world's caloric needs. Smaller subsidies for peanuts, sorghum. (UCSUSA)

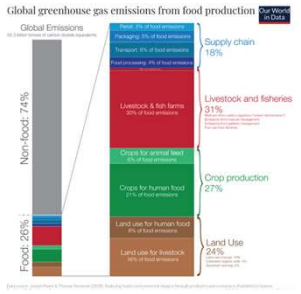
Rice field, Mississippi, Sharon Palmer

9

At What Cost to the Planet?

"Our present agriculture, in general, is not ecologically sustainable now, and it is a long way from becoming so. It is too toxic. It is too dependent on fossil fuels. It is too wasteful of soil, of soil fertility, and of water. It is destructive of the health of the natural systems that surround and support our economic life. And it is destructive of genetic diversity, both domestic and wild."
— Wendell Berry,
Bringing it to the Table:
Writings on Farming and Food

California farm, Sharon Palmer

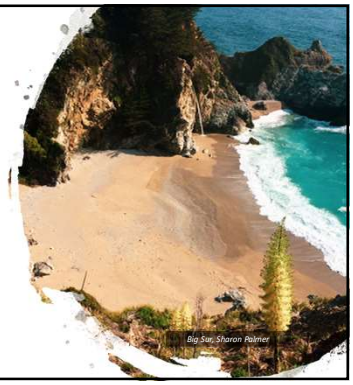


Feeding the world devastates terrestrial, aquatic ecosystems, drains water resources, drives climate change (Science, 2018).

10

Food Production's Long Shadow on the Planet

- The food system is responsible for 32% terrestrial acidification, 78% eutrophication.
- Farm stage of food chain makes up 61% of foods' GHGe.
- Using 43% world's ice- and desert-free land for agriculture.
- Leading cause of deforestation, biodiversity loss, and soil and water pollution.
- Accounts for 70% of all human water use. (Science, 2018).
- Climate change impacting seafood (less omega 3s), crops (more carbohydrates), and human metabolic processes to contribute to insulin resistance (*Front. Sustain. Food Syst.* 2018).
- 30-40% of U.S. Food supply wasted (USDA).
- 90% of world's fisheries fully exploited, over-exploited or collapsed (Seafood Watch).



Big Sur, Sharon Palmer

11

The Problems with Seafood

- 90% of world's fisheries fully exploited, over-exploited or collapsed.
- Fishing effects: Accidental catch of unwanted species, harming ocean floors.
- Aquaculture issues: feed performance, nitrogen discharge, chemical use, disease, escape.
- Fair labor issues in developing nations (Seafood Watch).

Aquaculture in Norway, Sharon Palmer

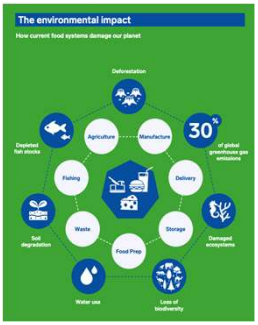
12

Philip Ackerman-Leist, Vermont Farmer, Author of *A Precautionary Tale* and *Rebuilding the Food Shed*, Dean of the School of the New American Farmstead, Sterling College, Vermont

Philip leading a RD sustainability tour to Brunnenburg, Italian Alps

13

From Farm to Fork



British Dietetic Association, 2018

14

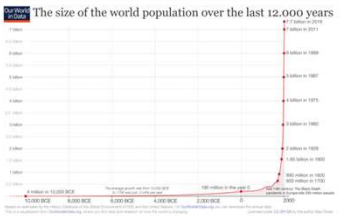
Welcome to the Anthropocene

Anthropocene:

the period during which human activity has been the dominant influence on climate and the environment.

Sustainable diets:
those **diets** with low environmental impacts which contribute to **food** and nutrition security and to healthy life for present and future generations.
FAO, 2013

15



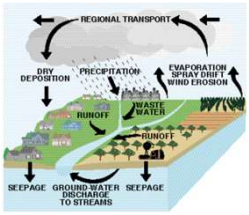
- World population: 9.8 B by 2050; 11.2 B by 2100
- 7 of 9 Planetary boundaries, within which humanity can continue to thrive, linked to our food system
- Climate change, reaching a tipping point—must limit to 1.5 C above pre-industrial levels (IPCC).

Planetary Boundaries
Stockholm Resilience Centre

16

Impacts of agrochemicals

- Increased over past 35 years (FAO).
- USA uses 1.2 B pounds pesticides per year (*Env Health*, 2019).
- Potentially harmful for humans, environment, and ecosystems (*Env Health*, 2019).
- Leading to pollution, increase in secondary pests, adverse effects on pollinators, disruption of soil ecology, contaminating surrounding environment and water (FAO).
- Lead to death of wildlife and beneficial organisms, biodiversity loss (FAO).
- Pesticide resistance, pesticide cocktails of concern. Can persist and bioconcentrate in food chain (FAO).
- Potential negative effect on humans from direct and indirect contact chronic exposure (i.e., endocrine disruption, birth defects, cancer) (FAO).
- Particular concerns for children and farm communities (WHO).



Pesticides in the atmosphere and water, WHO

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United Nations Sustainable Development Goals (SDGs)

"The SDGs are the world's shared plan to end extreme poverty, reduce inequality, and protect the planet by 2030" (UN Foundation).

- Adopted by 193 countries in 2015 based upon concept "leave no one behind."
- Many of SDGs have direct relationship with food system.

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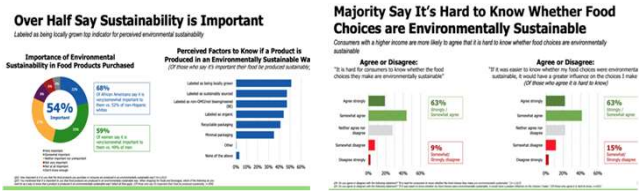
Good News! People Want to Eat Sustainably...



But They Don't Know How

(IFIC Food & Health Survey, 2019)

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Dietitians Can Make a Difference!

BDA survey, four key areas we need to focus on to ensure dietitians play role in sustainable diets:

1. Get involved: Improve availability of healthy, sustainable foods by developing policies.
2. Improve education and knowledge base for health professionals and consumers.
3. Clear and simple language
4. Relevancy, for all populations, groups, cultures.

Teaching a community nutrition class on a farm, Modesto, CA

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Action Steps

1	Improve your understanding of sustainable food systems.
2	Develop resources for including sustainability education in your education materials.
3	Identify areas in your practice in which you can incorporate sustainability messages.

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