

Bridging the Sustainability Gap

Food Systems and the Nutrition Professional

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Interest in sustainable food systems is not a passing fad. There is extensive evidence from many disciplines, including nutrition, which calls for a collaborative approach to advancing sustainable food systems policies and practices. Taking a systems approach provides a powerful professional and ethical framework from which to operate. The informed food and nutrition professional will be poised to provide the leadership and vision needed to promote food system sustainability. Given the availability and access to a consistent supply of healthy food and clean water are essential for human survival, these professionals have an incredible opportunity and obligation to shape the health and well-being of future generations. *Nutr Today*. 2012;47(4):155–160

SETTING THE STAGE

Interest in sustainable food system issues is not a passing fad, nor is sustainability the purview of a few tree-hugging naysayers, carbon emission-fearing geeks, or granola-eating foodies stuck in the 60s. Availability and access to a consistent supply of healthy food and clean water are essential for human survival. However, there are finite global resources available that support agricultural and aquaculture practices. Additionally, social, economic, environmental, and political systems inform food policies and practices. Ultimately, the manner in which current food systems are structured and function impacts the capacity to feed current and future populations. Thus, food systems and sustainability are inextricably linked. We are indeed at a critical juncture: how we construct food, fiber, and environmental policies and practices have far-reaching implications for Earth's inhabitants.

The requirement for healthy foods to support healthy people is implicitly understood but has recently moved to the forefront of agricultural, political, and social discourse. Embracing the extensive relationships among "healthy land, healthy food, and healthy eaters"¹ positions food and nutrition professionals to actively shape the future of local, regional, national, and international food systems. Histori-

cally, many nutrition professionals have not routinely integrated sustainable food system concepts into their practice. However, there is an urgent need, and critical opportunity, for sustainable food systems principles to permeate all areas of practice.^{1,2} Emerging professional demand for sustainable food system expertise is anticipated in a variety of settings, such as, but not limited to, informing local food production, enhancing kitchen literacy, integrating sustainable food and nutrition practices in K-16 education, developing food charters and policy, and integrating sustainability principles into agriculture, public health planning, communications, and community development.¹⁻³

The daily headlines in the public and professional media reveal the extent of risk to food system viability that is inherent in the continuation of the current fractured food system.⁴⁻⁶ Reports from a variety of societal sectors and from numerous professional disciplines share a common theme of national and global food systems under stress. Indicators of the magnitude and pervasiveness of food system vulnerability include, but are not limited to, diminished soil health,⁷ loss of crop and seed biodiversity,⁸ compromised agricultural capacity,⁹ concentration in the food marketplace,¹⁰ an increasing number and magnitude of aquatic dead zones,^{11,12} and climate change impacts on food production and water supplies.¹³⁻¹⁵ Although not the single cause, many unsustainable food system practices contribute to the development and extent of impaired health and compromised socioeconomic status. These include an increase in antibiotic resistance,¹⁶ escalating rates of diet- and environmental-related diseases,^{17,18} and unprecedented rates of food insecurity,¹⁹ as well as food injustice,²⁰ health disparities,²¹ and food recalls due to potential food safety issues.²²

DESCRIBING AND DEFINING FOOD SYSTEMS AND SUSTAINABILITY

There is no single or simple definition of a food system, of sustainability, or of a sustainable food system. Consider the term *system*. Webster defines it as "regularly interacting and interdependent items forming a unified whole."²³ For many, the food system is perceived as simply the combination of inputs (crops, fertilizers, transportation, labor, distribution, etc) and outputs (food at the grocery store, restaurants, local coffee shops, etc). At first glance, it appears the food system is working. Farms produce crops; there are additional foods secured through imports. Food

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is relatively inexpensive. There are an extensive number of grocery stores and restaurants and a seemingly endless variety of foods to choose from, despite the season. Many consumers experience the food system as going to the store, getting what they want, and then repeating the process week after week.

However, in reality, food systems are more complex than they appear. The need to construct, embrace, and advance food systems that link food production to nutrition and health outcomes in the context of environmental stability, economic viability, and social justice has emerged as a major challenge of this century.^{7,20,24} As noted by Anderson,²⁰ "sustainability per se is an empty goal for food system reform, unless what will be sustained and for whom are specified." Failure to take a comprehensive, sustainable food systems approach places the integrity of the entire system at risk. For instance, when conceptualized in isolation, the use of large amounts of fertilizer to enhance crop yields surely appears to benefit farmers and consumers alike. However, the extensive use of fertilizers and their concomitant runoff is now viewed as a major contributor to the 6800-square-mile massive "hypoxic" dead zone found in the Northern Gulf of Mexico along the Louisiana-Texas coast as well as other dead zones in the Chesapeake Bay, in Lake Erie and beyond.^{11,12,25}

Moving beyond the realm of academic food system discourse, groundbreaking publications of books such as *Fast Food Nation*,²⁶ *Food Politics*,⁵ the *Omnivores Dilemma*,⁴ *Animal Vegetable and Miracle*,²⁷ and *Slow Food Nation*²⁸ thrust food system issues into the public spotlight. There are countless points of entry that serve to link the average consumer with food system issues. Should one eat local or organic? Is raw milk better or a health risk? Should one worry about corn sweeteners? Can a community garden make a difference? Why is there so much hunger? Interest in food systems remains high as evidenced by the continued demand for publications and media that explore food system issues.^{6,29} The growth in farmers markets, the Slow Food movement and community-supported agriculture, and community- and school-based gardens demonstrate a renewed interest in food, its safety, and widespread concern about its future. They also provide additional impetus for food system expertise for those in the food and nutrition profession.

Similar to the term *food system*, sustainability is an exceptionally broad concept that is difficult to define. One of the most established and widely used definitions of sustainability comes from the 1987 United Nations World Commission on the Environment and Development Report. The commission was initially charged with identifying global environmental problems and proposing a global agenda that would address these common challenges. After months of work, and interviews with a wide range of people, the *Our Common Future*, also known as the

Brundtland Commission Report, was released.³⁰ It surmised that there was not one common global problem to eradicate, but that solutions to global environmental degradation would need to be based on promoting sustainable development while simultaneously addressing global poverty. The Commission defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

In terms of food system sustainability, more than 25 years ago nutrition professionals Gussow and Clancy³¹ advocated for dietary guidelines that would be based on sustainable food production practices. These sustainability-based guidelines would ideally promote food production and dietary practices that met the food needs of the current generation, without compromising the capacity of future generations to meet their food needs. In 1998, Sobal et al³² explicitly linked nutrition and health outcomes to the food system concept. They proposed the food and nutrition system be considered as "The set of operations and processes involved in the transforming of raw materials into foods, and transforming nutrients into health outcomes, all of which function as a system within biophysical and sociocultural contexts."³²

By 2000, Gillespie and Gillespie³³ proposed that the concept of the food system include not only the foundations inherent in food production and distribution, but also the social aspects of consumption and relevant government and nongovernment policies. For nutritionists, the 2009 Healthy Land, Healthy Foods & Healthy Eaters by Tagtow and Harmon¹ expanded upon the work of Gussow and Clancy³¹ and reintroduced their 2008 definition of a sustainable and resilient food system as one that conserves and renews natural resources, advances social justice and animal welfare, builds community wealth, and fulfills the food and nutrition needs of all eaters now and in the future.³⁴ However, when considering food systems and sustainability, Kirschenmann⁷ advises that the dynamic nature of sustainability needs to be recognized in any attempt to define it. Sustainability is thus as much as a process as a concept. He maintains that

Most current efforts to define a sustainable food system assume a steady-state situation; that is, if we just tweak our current food system so it causes less pollution, promotes conservation, regulates food safety more effectively, and includes more of the ingredients that a healthy diet requires, then it will be sustainable. Probably nothing could be further from the truth. Since nature is full of emergent properties, sustainability is always an emerging concept. Sustainability is about maintaining something indefinitely into the foreseeable future. Consequently, to be sustainable we have to anticipate and successfully adapt to the changes ahead. Sustainability is a process, not a prescription. This process always requires social and ecological as well as economic dimensions.^{7(p133)}

THE NUTRITION PROFESSIONAL AND SUSTAINABLE FOOD SYSTEMS

Implicit in the calls for embracing a sustainable food system framework are moral and ethical commitments reflecting a holistic approach to advancing accessible, healthy, and affordable food systems for all.^{20,24,28} For many years, populations have treated food, fiber, and environmental resources as if they were unlimited. From global concerns about climate change to uneven access to healthy foods, one realizes that food system sustainability is thus embedded in yet another larger, more complex framework of global viability, survivability, and social justice. As noted earlier, food is a shared human need. The resources used to produce, distribute, and process it are not unlimited. The local, national, and global community continues to merge as they become more dependent on each other. Although organized by states, nations, and cultures, we are all part of one humanity. There is at once great peril, but also great promise in this situation as noted in the preamble to the Earth Charter released in 2000:

We stand at a critical moment in Earth's history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward, we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Toward this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations.^{35(p1)}

As the Charter recognizes, we have begun to realize that all need to play in the same sandbox. The need to commit to the ever-evolving development and application of strategies that will provide healthy food to feed current and future generations in a socially just, culturally relevant, environmentally sound, and economically fair and viable manner captures the basic construct of a sustainable food system. It is indeed one of the greatest challenges facing our generation.

This complexity can at once appear daunting and indeed tempt one to rush back into the comfort zone of one's academic or professional silo. Embracing food system sustainability provides an operational framework from which personal and professional actions can be informed. It empowers us not only to ask how to feed so many food insecure people in America, but also to examine the social systems that contribute to food disparity and to address the upstream root causes of hunger. It challenges us to think broadly, so that the rights-based food system of the future is designed for full and fair access, with those producing the food treated as fairly as those consuming the food.^{6,20} Asking if the actions we take now promote the likelihood to produce access to healthy foods for all in future generations serves as common platform from which to operate.

We are at once challenged to work together in promoting existing sustainable practices while being actively involved in discerning future evidence-based practices and policies. From farm, to fork, to social justice and health outcomes, food and nutrition professionals are in a unique position to integrate and advance sustainable food system initiatives.

As a professional organization, the American Dietetic Association (ADA) has had mixed reviews regarding its stance on sustainability. Authors such as Marion Nestle⁵ and Michael Pollen^{4,36} have raised critical concerns regarding this organization's commitment and ability to address key food system issues given the organizations' extensive links and support from the large industrial-based food companies. However, recent publications and position papers by the ADA and the ADA professional practice group "Hunger and Environmental Nutrition" (HEN) have addressed some of the common challenges related to the food system and provide valuable information for nutrition professionals.³⁷⁻³⁹ Knowledge of the food system is now included as one of the required competencies established in the training of entry-level professionals in dietetic internships. Dietetic internships are including and integrating sustainability principles and practices into their programs. For example, a sustainable food system symposium was jointly sponsored by the University of New Hampshire, Durham; the Keene State University, Keene, New Hampshire; and University of Vermont, Burlington, dietetic internship programs. Selected readings were assigned prior to the symposium. Results indicated that interns were receptive to and planned to integrate food system sustainability into their personal and professional lives.⁴⁰ Beyond the symposium, each of these 3 internships integrates sustainability concepts throughout their respective internship experience. Additionally, the Montana State Dietetic Internship has identified sustainability as its emphasis.⁴¹ Members and committees associated with the HEN practice group of the ADA have been leaders in integrating and promoting food system sustainability into dietetics. This practice group took the lead in the development of the sustainability primer.³⁷ The HEN members Tagtow and Harmon¹ provided a very comprehensive review of critical sustainable food system concepts also previously identified.

The public health dimension of the food system provides additional compelling evidence of the need to embrace a comprehensive systems approach to community food nutrition issues.⁴²⁻⁴⁴ Food system expertise also represents an incredible opportunity to contribute positively to advancing food system viability and sustainability. Drawing on the work of Lyson and Green,⁴⁵ who promoted a "civic agriculture," Wilkins et al² called for the emergence of the application of civic dietetics that is integrated into professional practices. It is characterized by the ability to enhance

public health by addressing food system structures, impacts, and policies and their relationship to food.

NEXT STEPS

There are a number of strategies and opportunities that will promote personal and professional understanding and expertise in food system sustainability. If you are a registered dietitian, joining the HEN professional practice group is one quick step that will provide instant access to a host of resources and professionals committed to a healthy food system. Both the *Journal of Hunger & Environmental Nutrition*⁴⁶ and the *Agriculture and Social Values*⁴⁷ routinely cover topics related to sustainable food systems. The Community Food Security Coalition⁴⁸ has extensive online resources and plans an annual national meeting. The US Department of Agriculture Sustainable Agriculture Research and Education site⁴⁹ also has in-depth online information focused on emerging and evidence-based sustainable agricultural practices. The Economic Research Service of the US Department of Agriculture provides another lens from which food system analysis can be explored. For instance, its publication, *Energy Use in the US Food System* presents an analysis of the growing demand for energy inputs in our current food system.⁵⁰ It estimates that as a share of the national energy budget, food-related energy use grew from 12.2% in 1997 to 14.4% in 2002. Additional data can be found on a wide range of food system topics, including but not limited to national food assistance programs, farm programs, and the economic impact of organic foods in the marketplaces.⁵⁰ Alternatively, joining forces with those engaged in food policy councils sharpens one legislative and policy skills.

No matter the food and nutrition professionals' specialty, integrating sustainability principles advances long-term food system viability. One place to start is to consider an entry point that aligns with one's own personal or professional interests. For those employed in food service, discovering local sources of food and working with area food producers may serve as an initial entry into the support of place-based foods. In the community, promoting kitchen literacy or partnering with Cooperative Extension's Master Gardener programs can contribute to building food production skills. The emerging awareness of the potential link between increasing rates of antibiotic-resistant strains of bacteria and the widespread use of antibiotics in animal feed,¹⁶ promoting healthy eating and reducing institutional plate waste may indeed be of special interest to the clinical professional. Region of the country may also influence interests. For instance, residents in the Southwestern United States are facing critical water shortages,^{14,15} while those working in the northeast are facing concerns over identifying and promoting sustainable seafood options.⁵¹ Throughout the United States, but particularly where migrant labor is heavily relied upon, calls for food system policies that will support

basic human welfare, fair pay for farm workers, and social justice continue to be advocated.^{20,52} The Table presents a sampling of Web-based resources that food and nutrition professionals may find useful as they embark upon enhancing their understanding of sustainable food systems and applying this knowledge to their personal and professional practice.

TRANSFORMING OURSELVES; TRANSFORMING THE FOOD SYSTEM

As noted by Felder,⁵³ "Reforming and redesigning our food system so that it accurately weighs the true costs of cheap food and cheap labor, along with the high costs to the environment and human health, is the issue of our times." The present food system calls for bold initiatives for transformational, sustainable changes. Food and nutrition professionals who understand the basics of the food system remain credible in the marketplace and are positioned to provide critically needed professional guidance and leadership. Food

TABLE Sample Web Resources: Food Systems, Security, and Sustainability

American Dietetic Association, http://www.eatright.org
American Farmland Trust, http://www.farmland.org/programs/campaign/default.asp
Bread for the World, http://www.bread.org/
Community Food Security Coalition, http://www.foodsecurity.org
Environmental Working Group, http://www.ewg.org
Food and Agriculture Organization, http://www.fao.org/worldfoodsituation/en/
Food Research Action Center, http://www.frac.org/index.html
Food Nutrition Service, US Dept. of Agriculture, http://www.fns.usda.gov
Institute for Agriculture and Trade Policy, http://www.iatp.org
National Campaign for Sustainable Agriculture, http://www.sustainableagriculture.net
National Family Farm Coalition, http://www.nffc.net
NEFOOD. The Northeast Farm and Food Network, http://www.nefood.org/
Oxfam America, http://www.oxfamamerica.org/
Slow Food USA, http://www.slowfoodusa.org/
Union of Concerned Scientists, http://www.ucsusa.org/
World Hunger Year, http://www.worldhungeryear.org

system expertise also represents an incredible opportunity to make generational differences. Dietitians can no longer view food and sustainability in isolation, but as part of a bigger system. As Wendell Berry⁵⁴ notes that eaters, "...must understand that eating takes place inescapably in the world, that it is inescapably an agricultural act, and that how we eat determines, to a considerable extent, how the world is used. This is a simple way of describing a relationship that is inexpressibly complex."

REFERENCES

1. Tagtow A, Harmon A. Healthy land, healthy food & healthy eaters: dietitians cultivating sustainable food systems. Hunger and Environmental Practice Group. *Am Diet Assoc.* 2009;1–8.
2. Wilkins JL, Lapp J, Tagtow A, Roberts S. Beyond eating right: the emergence of civic dietetics to foster health and sustainability through food system change. *J Hunger Environ Nutr.* 2010;5:2–12.
3. Food System and Public Health Conference Work Team. *Principles of a Healthy, Sustainable Food System.* American Diet Association, American Nurses Association, American Planning Association and American Health Association. 2010. <http://www.planning.org/nationalcenters/health/pdf/HealthySustainableFoodSystemsPrinciples.pdf>. Accessed October 12, 2011.
4. Pollen M. *Omnivores Dilemma: A Natural History of Four Meals.* New York, NY: Penguin Press; 2006.
5. Nestle M. *Food Politics: How the Food Industry Influences Nutrition and Health.* Berkeley CA: University of California Press; 2002.
6. Hesterman OB. *Fair Food: Growing a Sustainable Food System for All.* New York, NY: Public Affairs (Perseus Books); 2011.
7. Kirschenmann FI. Food as relationship. *J Hunger Environ Nutr.* 2008;3(2–3):106–121.
8. Shiva V. *Manifestos on the Future of Food and Seed.* Cambridge MA: South End Press; 2007.
9. Tilman D, Cassman KG, Matson PA, et al. Agricultural sustainability and intensive production practices. *Nature.* 2002;418(8):672–677.
10. Heffernan W, Hendrickson M, Gronski R. *Consolidation in the Food and Agriculture System.* Washington, DC: National Farmers Union; 1999.
11. Scavia D. Dead zones in the Gulf of Mexico and other waters require a tougher approach. *Times Picayune.* September 2, 2011. <http://www.gulphyoxia.net/news/default.asp?XMLFilename=201109261058.xml>. Accessed October 2011.
12. Diaz RJ, Rosenberg R. Spreading dead zones and consequences for marine ecosystems. *Science.* 2008;321(5891):926–929.
13. Rosenzweig C, Tubiello FN, Goldberg R, Mills E, Bloomfield J. Increased crop damage in the US from excess precipitation under climate change. *Global Environ Change.* 2002;12(3):197–202.
14. Natural Resources Defense Council. Climate Change, Water, and Risk: Current Water Demands Are Not Sustainable. July 2010. <http://www.nrdc.org/globalwarming/watersustainability/files/WaterRisk.pdf>. Accessed December 29, 2011.
15. Marshall RM, Robles MD, Majka DR, Haney JA. Sustainable Water Management in the Southwestern United States: Reality or Rhetoric? *PLoS One.* 5(7):e11687. <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0011687>. Accessed December 31, 2011.
16. Silbergeld EK, Graham J, Price LB. Industrial food animal production, antimicrobial resistance and human health. *Ann Rev Public Health.* 2008;29:151–169.
17. Heron M. Leading causes of death 2007, Beltsville MD: CDC. *Natl Vital Stat Rep.* 2007;59:8. http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_08.pdf. Accessed October 9, 2011.
18. Perera EM, Sanford, T. Climate change and your health. Rising temperature worsening ozone pollution. *Union of Concerned Scientists.* http://www.ucsusa.org/assets/documents/global_warming/climate-change-and-ozone-pollution.pdf. Accessed October 14, 2011.
19. USDA Briefing Room. Increasing rates of food insecurity. http://www.ers.usda.gov/briefing/foodsecurity/stats_graphs.htm#how_many. Accessed October 9, 2011.
20. Anderson MD. Rights-based food system and the goals of food system reform. *Agric Hum Values.* 2008;25:593–608.
21. Neff RS, Palmer AM, McKenzie SE, Lawrence RS. Food systems and public health disparities. *J Hunger Environ Nutr.* 2009;3–4:282–314.
22. Centers for Disease Control and Prevention. Food Safety: Select Bibliography. http://www.cdc.gov/winnablebattles/foodsafety/pdf/FoodSafety_WB_SelectBibliography.pdf. Accessed October 10, 2011.
23. Merriam-Webster Dictionary. Definition of system. <http://www.merriam-webster.com/dictionary/system>. Accessed October 9, 2011.
24. United Nations High Level Task Force on the Global Food Security Crisis: Updated comprehensive framework for action. September 2010. <http://www.scalingupnutrition.org/wp-content/uploads/2011/05/110913-SUN-Progress-Report.pdf>. Accessed October 10, 2011.
25. Arend KK, Beletsky D, DePinto JV, et al. Seasonal and interannual effects of hypoxia on fish habitat quality in central Lake Erie. *Freshwater Biol.* 2011;56:366–383. <http://www.glerl.noaa.gov/pubs/fulltext/2011/20110007.pdf>. Accessed December 29, 2011.
26. Schlosser E. *Fast Food Nation: The Dark Side of the All-American Meal.* New York: Houghton Mifflin; 2001.
27. Kingsolver B, Hopp SL, Kingsolver C. *Animal, Vegetable, Miracle: A Year of Food Life.* New York: Harper Collins; 2007.
28. Petrini C, Padavoni G. *Slow Food Nation.* New York: Random House; 2007.
29. Weber K, ed. *Food Inc. Public Affairs, Member of Perseus Publishing.* New York, NY; 2009.
30. *Our Common Future.* Oxford: Oxford University Press; 1987.
31. Gussow JD, Clancy K. Dietary guidelines for sustainability. *J Nutr Educ.* 1986;18:1–5.
32. Sobal J, Kahn LK, Bisogni C. A conceptual model of the food and nutrition system. *Soc Sci Med.* 1998;47:853–863.
33. Gillespie AH, Gillespie GW. Community food systems: toward a common language for building productive partnership. Cornell Community Nutrition Program; 2000. <http://www.foodroutes.org/doclib/28/foodsystemdefs.pdf>. Accessed October 12, 2011.
34. Harmon AH, Tagtow AM. Sustainable Food Systems. Opportunities for Dietitians. Presented at the Major Oral Session for the American Dietetic Association Annual Food and Nutrition Conference and Exhibition; Chicago, IL; October 27, 2008.
35. The Earth Charter Initiative. The Earth Charter. 2000. <http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html>. Accessed October 11, 2011.
36. Pollen M. *In Defense of Food.* New York: The Penguin Press; 2008.
37. American Dietetic Association Sustainable Food Systems Task Force (Lollar D, Harmon A, Hartman B, O'Neil C, Ramondi M, Roberts S, Tagtow A, Wilkins J, Devlin C, Holler H). Healthy land, healthy people. Building a better understanding of sustainable food systems for food and nutrition professionals. A primer on sustainable food systems and emerging roles for food and nutrition professionals. American Dietetic Association, Chicago, IL (members only) 2007.
38. Position of the American Dietetic Association: food and nutrition professionals can implement practices to conserve natural resources and support ecological sustainability. *J Am Diet Assoc.* 2007;107:1033–1043.
39. Position of the American Dietetic Association: food and water safety. *J Am Diet Assoc.* 1993;103:1203–1218.
40. Nickerson A, Burke J, Balnis K. Integrating food system expertise into the nutrition professional's curriculum. Oral presentation at the American Association for Sustainability in Higher Education; October 10, 2011; Pittsburgh, PA.
41. Montana State Dietetic Internship description. <http://www.montana.edu/hhd/postbaccalaureate/index.htm>. Accessed October 13, 2011.
42. Muller M, Tagtow A, Roberts S, MacDougal E. Aligning food systems policies with public health. *J Hunger Environ Nutr.* 2009;4:225–240.

43. O'Kane G. What is the real cost of our food? Implications for the environment, society and public health. *Public Health Nutr.* Accepted May 2011. <http://journals.cambridge.org/download.php?file=%2FPHN%2F5136898001100142Xa.pdf&code=c483087ca2815a5ed563057d88374391>. Accessed October 12, 2011.
44. Burke JD. Just food: obesity trends demand system strategies [published online ahead of print March 18, 2011]. *Am J Lifestyle Med.* 2011;5(3)222–228.
45. Lyson TA, Green J. The agricultural Marketscape; a framework for sustaining agriculture and communities in the northeast. *J Sustain Agric.* 1999;15:133–150.
46. *Journal of Hunger & Environmental Nutrition.* New York: Taylor and Francis; 2006. <http://www.tandfonline.com/toc/when20/current>. Accessed June 26, 2012.
47. *Agriculture and Social Values.* New York: Springer Publications. <http://www.springer.com/social+sciences/applied+ethics/journal/10460>. Accessed June 26, 2012.
48. Community Food Security Coalition. <http://www.foodsecurity.org/>. Accessed June 26, 2012.
49. US Department of Agriculture. Sustainable Agriculture Research & Education (SARE) <http://www.sare.org/>. Accessed June 26, 2012.
50. Canning P, Charles A, Huang S, Polenske KR, Waters A. *Energy Use in the US Food System.* US Department of Agriculture. Economic Research Service Report 94. <http://www.ers.usda.gov/publications/err94/>. Accessed June 26, 2012.
51. Seafood: The Maine Consumer Perspective. Maine Policy Review. Margaret Chase Smith Policy Center at the University of Maine Orono and the Margaret Chase Smith Library, Skowhegan. 2011; 20(1):97–104. http://mcspolicycenter.umaine.edu/files/pdf_mpr/v20n1/PDF_articles/Full_v20_no1_MPR_11Spr_Print.pdf. Accessed January 2, 2012.
52. Bauer M, Ramirez M. Injustice on our plates Immigrant women in the US food industry. Southern Poverty Law Center. November 2010. http://www.splcenter.org/sites/default/files/downloads/publication/Injustice_on_Our_Plates.pdf. Accessed January 2, 2010.
53. Felder D. It's Growing Season for Maine's Food System. Maine Policy Review. Margaret Chase Smith Policy Center at the University of Maine Orono and the Margaret Chase Smith Library, Skowhegan. 2011;20(1):12–17. http://mcspolicycenter.umaine.edu/files/pdf_mpr/v20n1/PDF_articles/Full_v20_no1_MPR_11Spr_Print.pdf. Accessed January 2, 2012.
54. Berry W. The pleasures of eating. In: *What Are People for?* New York, NY: North Point Press; 1990.