



Organic Farming for Health and Prosperity

Executive Summary
September 2011



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Organic Farming is Important to Human Health and the Health of the Economy

Farmers are the largest group of ecosystem managers on the earth.¹

Organic farming is a rapidly expanding economic sector and makes an important contribution to human health, the health of the economy, and the health of the planet. The evidence is clear about the success of organic farming in terms of human health, prosperity, the benefits to soil and water, to birds and bees, and the ability of organic farming to mitigate damage from global climate change.

Because of the many benefits of organic farming, public policies should support investing in the expanding organic sector. The Farm Bill is due to be re-configured and re-authorized before the end of 2012 and, as the primary instrument of agricultural policy, the Farm Bill is a likely vehicle for investment in organic agriculture. Currently, agricultural policy does very little to support organic farmers and, in some cases, works against the interests of organic farmers.

The *Organic Farming for Health & Prosperity* Report is a review of the American scientific literature concerning organic farming in the United States, designed to examine the many benefits of American organic agriculture and identify the key ways in which agriculture policy could best be supportive of organic farmers.

The Organic Farming Research Foundation works to empower the organic farmer. As part of that work, OFRF supports policies that build infrastructure for the American organic farmer—making organic family farming profitable, viable, and attractive. OFRF promotes policies that permit organic farmers to fully meet current market demand and meeting its potential of becoming the leading form of agriculture within a generation.

Currently there are 14,500 certified organic farmers in the United States and demand for organic foods is growing. By 2015, the number of organic farmers required to meet projected market demand must triple to at least 42,000 organic farmers.² We can, and should, see the next generation enjoying easily accessed healthy food that ensures the protection of a thriving environment.

Organic farming is a system of management that prioritizes health with productivity. Organic farmers use biological methods and management practices such as diversified crop rotations that improve soil quality. Organic farming increases soil organic matter, which enhances the soil's ability to absorb and store carbon, cycle nutrients, and absorb water. Increased soil organic matter contributes to greater resilience under stresses including drought and flooding.

¹ L. Jackson., M. van Noordwijk, J. Bengtsson, W. Foster, L. Lipper, M. Pulleman, M. Said, J. Snaddon, and R. Vodohe. 2010. Biodiversity and agricultural sustainability: from assessment to adaptive management. *Current Opinion in Env. Sust.* 2:80-87.

² Based on research from the Department of Agriculture and the Organic Trade Association.

High organic matter levels in soil produces crops with a greater ability to resist insect pests and diseases.

The federal statute defines organic farming as: *A production system that is managed in accordance with the (national organic standards) to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.*³

In the United States, in order to use the word “organic” to market a product, a farmer or processor must meet strict regulations to be certified organic. To gain organic certification, a farmer (of cropland, pasture or livestock) submits an organic system plan to an accredited certifier each year. This documents how the farmer adheres to the national organic standards implemented under the U.S. Department of Agriculture’s (USDA) National Organic Program. Certified organic farms and processing facilities undergo annual inspections to verify that they are meeting the standards. Organic inspectors examine all elements of a farm operation for adherence to the standards and verify that the farm is being managed according to the farmer’s organic system plan.

This review of the scientific literature concerning organic farming in the United States is derived from articles reporting organic research in the United States and Canada, published from 2000 onward.⁴ The literature review takes as its primary sources research papers published in peer-reviewed academic journals. Additional rigorous sources, such as the U.S. Department of Agriculture, organizations associated with the United Nations, Rodale Institute, the Organic Trade Association, and the Organic Center, are cited when the peer-reviewed literature on a given topic is non-existent or difficult to find. This report concludes with a set of actionable policy recommendations.

When the body of scientific literature is reviewed as a whole, it is easy to see that organic farming practices are good for people, the economy, agriculture, soil and water quality, and biodiversity. Organic farming practices will help mitigate climate change. (Please see Table 1 for a summary of select key organic farming practices and their benefits.)

It is time that the many benefits of organic agriculture are acknowledged by more policymakers and supported with a new unified policy to support organic farmers and the organic food industry. Over the past decade, modest public resources have been directed toward organic farming in the form of funding for research and data collection, funding to offset a small

³ Organic Foods Production Act of 1990. USDA’s National Organic Program is the administrative body in charge of organic production.

⁴ For the purposes of this study, we have not examined the large body of organic research focused internationally. In cases where there are gaps in the literature, the review extends back into the 1990s.

amount of certification costs, enforcement of the organic standards, and an initiative to ensure fair access to conservation programs for farmers. The resources allocated to date, however, are still far disproportionate to the investment needed to realize the great potential of organic farming.

Table 1: Select key organic farming practices and their benefits.

Organic Farming Practice	Environmental benefits
Crop rotation	Enhances soil quality, disrupts weed, insect, and disease life cycles, sequesters carbon and nitrogen, diversifies production (can have market benefits)
Manure, compost, green manure use	Enhances soil quality, sequesters carbon and nitrogen, contributes to productivity
Cover cropping	Enhances soil quality, reduces erosion, sequesters carbon and nitrogen, prevents dust (protects air quality), improves soil nutrients, and contributes to productivity
Avoidance of synthetic fertilizers	Avoids contamination of surface and ground waters, enhances soil quality, sequesters carbon, mitigates salinization (in many cases)
Avoidance of synthetic pesticides	Enhances biodiversity, improves water quality, enhances soil quality, assists in effective pest management, prevents disruption of pollinators, reduces costs of chemical inputs
Planting habitat corridors, borders, and/or insectaries	Enhances biodiversity, supports biological pest management, provides wildlife habitat
Buffer areas	Improves water quality, enhances biodiversity, prevents wind erosion

FINDINGS

Organic Farming is Good for Human Health

Organic farming is specifically designed to grow food without the use of toxic substances. Exposure to chemicals used in agriculture has been linked to cancer in many parts of the body including the brain and central nervous system, breast, colon, lungs, ovaries, pancreas, kidneys, testes, and stomach, according to the U.S. Dept. of Health and Human Services' President's Cancer Panel's 2010 report. The President's Cancer Panel examined the impact of environmental factors and the use of synthetic chemicals on cancer risks and recommends that American consumers eat food grown without pesticides and synthetic fertilizers.⁵

There is a large body of literature that documents the negative impacts of synthetic pesticide exposure on conventional farmworkers and their families, much of it summarized in the President's Cancer Panel report. Some of these problems include increased incidence of certain types of cancers by farmworkers and their spouses, increased exposure to pesticides by children living in agricultural areas, and increased incidence of leukemia in children living in agricultural areas.⁶ By not applying toxic synthetic pesticides, fungicides, and herbicides, organic farmers do not contribute to these health issues.

Organic Farming is Good for Job Creation

As our country has been dramatically affected by the worst economic downturn in 80 years, the organic industry has remained in positive growth territory and has come out of the recession hiring employees, adding farmers, and increasing revenue. The organic industry has grown from \$3.6 billion in 1997 to \$29 billion in 2010, with an annual growth rate of 19 percent from 1997-2008. The organic agriculture sector grew by 8 percent in 2010.⁷

Organic farms bring economic benefits to their communities by providing expanding employment opportunities. The latest data indicate that 96 percent of organic operations nation-wide are planning to maintain or increase employment levels in 2011. Organic farms hired an average of 61 year-round employees compared with 28 year-round employees hired on conventional farms, according to a recent survey of organic and conventional farmers in Georgia, North Carolina, South Carolina, Alabama, and Mississippi.⁸ The survey found that organic farms also hire more seasonal workers than do conventional farms.

⁵ U.S. Dept. of Health and Human Services. National Institutes of Health. National Cancer Institute. 2010. *Reducing Environmental Cancer Risk. What We Can Do Now*. Available online at <http://deainfo.nci.nih.gov/advisory/pcp/annualReports/index.htm>.

⁶ Ibid.

⁷ Organic Trade Association's 2011 Industry Survey. Organic Trade Association press release issued April 21, 2011. Available online at http://www.organicnewsroom.com/2011/04/us_organic_industry_valued_at.html.

⁸ F.I. Santos, and C.L. Escalante. 2010. Farm Labor Management Decisions of Organic and Conventional Farms: A Survey of Southeastern Farm Businesses. Univ. Georgia Outreach Bulletin AGECON-10-001. Available online at <http://www.ces.uga.edu/Agriculture/agecon/pubs/Outreach%20Bulletin%20-%20Farm%20Labor%20Management%20Survey.pdf>.

In the United States, 53 percent of organic farms hire labor in comparison to 22 percent for the entire sector.⁹ The labor share of production costs is higher on an organic farm for several reasons, primarily:

- **Crop Type:** many small- and medium-sized organic farms specialize in growing high-value crops such as fruits and vegetables, which typically require more hand labor than field crops. Thirty-five percent of organic farm-level sales are of fruits and vegetables, while for the agricultural sector as a whole only 11 percent of farm-level sales are of fruits and vegetables;¹⁰ and
- **Substitution of Labor for Herbicides and Pesticides:** organic farms rely on labor-intensive practices including planting and incorporating cover crops, hand- or mechanical tillage, and planting flowering hedgerows or corridors to attract beneficial insects and birds that can control crop pests.

Organic Farming is Good for the Economy

Organic farming is profitable. Census data shows United States organic farms on average have higher sales, higher production expenses, and higher operating profit than the average for all U.S. farms, creating real opportunity for rural economic livelihood. Examples of field studies about profitability include:

- A study of nine years of data from Minnesota showed that net returns to the four-year organic rotation were significantly higher than returns to the conventional systems when a price premium was included; when the premium was not included, net returns were statistically equal to conventional.¹¹
- In Washington state, a study of three types of farming systems (organic, conventional, and integrated) in a commercial orchard indicated that because organic apples sold for a higher price, the breakeven point for the organic system was reached sooner than it was in the other two systems.¹²
- In Iowa, returns from an organic system after three years were competitive with returns from the conventional system.¹³

⁹ C. Dimitri, 2010. "Organic Agriculture: An Agrarian or Industrial Revolution?" *Agricultural and Resource Economics Review*.

¹⁰ Ibid.

¹¹ P.R Mahoney, K.D. Olson, P.M. Porter, D.R. Huggins, C.A.Perillo, and R.K. Crookston. 2004. Profitability of organic cropping systems in southwestern Minnesota. *Renewable Agriculture and Food Systems* 19:35–46.

¹² J.P. Reganold, D. Jackson-Smith, S.S. Batie, R.R. Harwood, J.L. Kornegay, D. Bucks, C.B. Flora, J.C. Hanson, W.A. Jury, D. Meyer, A. Schumacher, Jr., H. Sehmsdorf, C. Shennan, L.A. Thrupp, and P. Willis. 2011. "Transforming U.S. agriculture." *Science Magazine*. Vol. 332 no. 6030 pp. 670-671.

¹³ K. Delate, M. Duffy, C.Chase, A. Holste, H. Friedrich, and N. Wantate. 2003. An economic comparison of organic and conventional grain crops in a long-term agroecological research (LTAR) site in Iowa. *American Journal of Alternative Agriculture* 18:59–69.

- USDA data for dairy operations indicate that average operating and capital costs are higher for organic dairies than for their conventional counterparts, but the prices farmers receive are higher as well.¹⁴
- USDA data indicate that organic soybean producers earn higher profits even in years when yields are slightly lower largely because of the higher market prices received for organic food-grade soybeans.¹⁵

Since 78 percent of organic farms report planning to maintain or increase organic production levels over the next five years, the organic sector will continue to play a contributing role in revitalizing America's rural economy through diversity in agriculture.¹⁶

Organic Farming is Good for Soil and Water

Soil organic matter is the key to air and water quality.

--U.S. Natural Resources Conservation Service

Organic farming practices improve soil quality and water quality and retention. Using biological forms of fertilizer such as compost, animal manures, and legume cover crops builds soil organic matter in organically managed soils, even when routine tillage is used for weed control. Building soil organic matter increases soil water retention and nurtures more active soil microbial communities that retain nitrogen in the soil longer and transform it into non-leachable gaseous forms.¹⁷ There is a small but telling body of research in the United States that suggests that improved soil quality influences crop ability to withstand or repel insect attack¹⁸ and plant disease.¹⁹

Organic biological fertilizer sources release their nutrients slowly over time, providing more opportunity for the nitrogen to be digested by soil organisms and taken up by crops before

¹⁴ W.D. McBride and C. Greene. 2009b. "Costs of organic milk production on U.S. Dairy Farms." *Review of Agricultural Economics*. Vol. 31. No. 4. pp 793-813.

¹⁵ W.D. McBride and C. Greene. 2009a. "The profitability of organic soybean production." *Renewable Agriculture and Food Systems*. Vol. 24(4). pp 276-284.

¹⁶ USDA Organic Production Survey

¹⁷ L.E. Drinkwater and S.S. Snapp. 2007. Nutrients in agroecosystems: rethinking the management paradigm. *Advances in Agronomy* 92:163-186.; C.P. McSwiney, S.S. Snapp and L.E. Gentry. 2010. Use of N immobilization to tighten the N cycle in agroecosystems. *Ecological Applications* 20:648-662; S.B.Kramer, J.P. Reganold, J.D. Glover, B.J.M. Bohannan, and H.A. Mooney. 2006. "Reduced nitrate leaching and enhanced denitrifier activity and efficiency in organically fertilized soils." *Proc. National Academy of Science*. 103:4522-4527; M. Burger and L.E. Jackson. 2004. Plant and microbial nitrogen use and turnover: rapid conversion of nitrate to ammonium in soil with roots. *Plant and Soil*. 266:289-301.

¹⁸ Phelan, P. L., Mason, J. R., and Stinner, B. R. 1995. Soil-fertility management and host preference by European corn borer, *Ostrinia nubilalis* (Hübner), on Zea mays L.: A comparison of organic and conventional chemical farming. *Agriculture, Ecosystems & Environment*, 56, 1–8. AND Phelan, P. L., Norris, K., and Mason, J. R. 1996. Soil-management history and host preference by *Ostrinia nubilalis* (Hübner): Evidence for plant mineral balance as a mechanism mediating insect/plant interactions. *Environmental Entomology*, 25, 1329–1336.

¹⁹ B. Liu, C. Tu, S. Hu, M. Gumpertz, and J.B. Ristaino. 2007. Effect of organic, sustainable, and conventional management strategies in grower fields on soil physical, chemical, and biological factors and the incidence of Southern blight. *Applied Soil Ecology* 37:202-214.

leaching below the root zone. Organic management that utilizes scavenger cover crops to take up excess nitrogen recycles nutrients and reduces soil erosion potential.²⁰

Increased soil organic matter in the soil leads to tighter nutrient cycling and greater water holding capability in organically managed soils, with the result that nitrate leaching into groundwater is about half that of conventionally farmed soils. Nitrate leaching from agricultural soils is a significant concern because of the role it plays in creating dead zones such as the hypoxia in the Gulf of Mexico.²¹ University of Minnesota researchers found that alternative cropping systems including organic reduced the amount of water lost in drainage tiles by 41 percent.²²

Recent data from a 12-year study shows that fields under organic management had half the annual nitrate leaching losses than fields under conventional management.²³ A modeling study that compared nitrogen exports into Lake Michigan under different scenarios found organic farming to be the only land management scenario that would reduce rather than increase nitrogen loading into the water.²⁴

Organic Farming is Good for the Birds and the Bees

Certified organic farmers in the United States are required to “conserve biodiversity” on their farms. Because of their reliance on diversified cropping systems, organic farms are being found to support larger populations of beneficial organisms such as songbirds and pollinators than conventional farms.

Most of the studies indicate that species abundance and richness were higher on organic than on conventional farms for a wide range of species. A two-year study in Nebraska, for example, found that fields on organic farms had more birds and more bird species than were found on non-organic farms.²⁵

The simplest way that organic farming supports diverse insect populations is by prohibiting the use of synthetic pesticides.²⁶ One study found that native bee populations supported 50-100 percent of the pollination needs for a watermelon crop on organic farms and none on

²⁰ S.S. Snapp, L.E. Gentry, and R. Harwood. 2010. “Management intensity – not biodiversity – the driver of ecosystem services in a long-term row crop experiment.” *Agriculture, Ecosystems, and the Environment*. 15 August 2010, Pages 242-248

²¹ M.B. David, L.E. Drinkwater, and G.F. McIsaac. 2010. Sources of nitrate yields in the Mississippi River Basin. *J. Environ. Qual.* 39:1657-1667.

²² Oquist, K.A., J.S. Strock, and D.J. Mulla. 2007. Influence of alternative and conventional farming practices on subsurface drainage and water quality. *J. Environ. Qual.* 36:1194–1204.

²³ S.S. Snapp et al. 2010

²⁴ H. Han, J.D. Allan, D. Scavia. 2009. “Influence of Climate and Human Activities on the Relationship between Watershed Nitrogen Input and River Export.” *Environmental Science and Technology*. Vol. 43. No. 6.

²⁵ N.A. Beecher, R.J. Johnson, J.R. Brandle, R.M. Case, and L.J. Young. 2002. Agroecology of birds in organic and nonorganic farmland. *Conservation Biology* 16(6): 1620–1631.

²⁶ While certain pesticides are allowed in certified organic production, they must be shown to “not be harmful to human health or the environment”. USDA. 2005. Organic Foods Production Act of 1990 as Amended. Available online at <http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5060370&acct=nopgeninfo>.

conventional farms, which therefore required pollination from honey bees brought in for that purpose.²⁷

Organic Farming is Good for Slowing Climate Change

Global climate change is increasing the frequency of costly droughts, floods, heat waves and major storms. The destabilized climate is already affecting crop production and water availability, causing hunger, malnutrition, and social unrest worldwide. Organic farming is uniquely able to help mitigate further warming by removing greenhouse gases from the atmosphere and is well-positioned to adapt to new climate conditions.

Scientists have documented that human activity is responsible for unprecedented levels of greenhouse gases in the atmosphere that trap heat and contribute to global climate change.²⁸ Emissions of carbon dioxide (CO₂), nitrous oxide (N₂O), and methane (CH₄), the three main greenhouse gases that are released by humans, have increased more than 70 percent in the last 30 years.²⁹ Agricultural production releases 13.5 percent of human greenhouse gas emissions globally and, in the United States, 6 percent of all greenhouse gas emissions.³⁰

Two primary strategies for mitigating climate change are to increase carbon sequestration into soils and to reduce greenhouse gas emissions.

While there are ultimately physical limits to the amount of carbon that can be stored in the soil, organic farming systems--particularly those with lengthy, diversified rotations and that integrate crop and livestock production -- can play a significant role in helping capture carbon. The Intergovernmental Panel on Climate Change has offered recommendations for adapting agriculture to mitigate climate change by increasing soil carbon storage, including those already being used by organic farmers:

- reducing reliance on synthetic fertilizers and pesticides;
- using legumes and perennials in crop rotations; and
- using catch or cover crops.

²⁷ C. Kremen, N.M. Williams, and R.W. Thorp. 2002. "Crop pollination from native bees at risk from agricultural intensification." *Proceedings of the National Academy of Sciences*. Vol. 99. pp 16812-16816.

²⁸ IPCC. 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

²⁹ Ibid.

³⁰ Ibid.

The world's soils, if managed carefully, could capture an estimated 5-15 percent of global emissions released by burning fossil fuels, or 0.4-1.2 gigatons of carbon per year.³¹

One method for assessing the global warming potential of agricultural systems is a life cycle assessment which considers the “cradle-to-farmgate” energy demand. A Canadian life cycle study of canola, corn, soy, and wheat grown with a legume green manure found that organic crop production would consume, on average, 39 percent of the energy utilized by conventional production.³² Most of these differences were due to the high energy demand and emissions associated with production of synthetic fertilizers used in the conventional system.

As global climate change increases, the frequency and intensity of droughts, floods, heat waves and major storms will also increase. Organic farming practices that improve soil structure, water-holding capacity, and nutrient cycling will be more resilient in the face of these climatic extremes. Maintaining vegetative cover throughout the year -- whether under pasture, forage, or cover crops -- is key. Iowa State researchers, for example, found that perennial crops absorbed 5-7 times the precipitation as corn or soybeans during the first hour of rainfall.³³ Researchers at the Rodale Farming Systems Trial found that the organic plots were productive even in years of extreme drought.³⁴

³¹Lal, R. (2004): Soil carbon sequestration impacts on global climate change and food security. *Science* 304, 1623-1627.

³² N. Pelletier, N. Arsenault, and P. Tyedmers. 2008. Scenario modeling potential eco-efficiency gains from a transition to organic agriculture: life cycle perspectives on Canadian canola, corn, soy, and wheat production. [Environ Manage.](#) 42:989-1001.

³³ L. Bharati, K.-H. Lee, T.M. Isenhardt, and R.C. Schultz. 2002. Riparian zone soil-water infiltration under crops, pasture and established buffers. *Agroforestry Systems* 56:249-257.

³⁴ D. Lotter, Seidel, R., & Liebhardt, W. (2009). The performance of organic and conventional cropping systems in an extreme climate year. *American Journal of Alternative Agriculture*, 18(03), 146-154.



Organic Farming Has Many Benefits: Policies Should Support Its Expansion

Despite the many demonstrated benefits of organic farming -- for human health, economic growth, and the environment, the current agriculture system is designed to support conventional farming. Some agricultural policies actually work against the interests of organic farming. It is imperative that government address the growing interests of organic farmers and conventional farmers who are transitioning to organics.

Because of the many benefits, it is in the public interest to promote organic farming through a unified set of policies that invest in organic research, build an appropriate farm safety net for organic farmers, help meet market demand, provide transition assistance, and reward organic agriculture's environmental benefits.

Therefore, it is important that policy makers promote policies that support organic farmers, that Members of Congress and federal agencies view organic agriculture as key to the success of the this country – a growing industry that means more jobs and economic growth while protecting human health and the environment.

Policy Recommendations

The clear scientific evidence of the success of organic farming in terms of human health, economic health and the environment must guide the development and implementation of twenty-first century policies. Such policies must create a food and farming system that provides enhanced societal benefits in addition to production of food, fiber, and fuel. Reforming agriculture policies toward investment in organic systems is a necessary evolution. Key policy recommendations are made below that both facilitate the expansion of organic agriculture and leverage the multiple benefits that it provides.

The Farm Bill is the primary agricultural policy in the United States and is an important vehicle for investment in organic agriculture. In addition to the Farm Bill, a number of other policy arenas could be created or modified to either reward organic farming or break down barriers for organic farmers.

Priority #1: Expand Organic Research Funding

- Significantly increase funding for organic research, education, and extension activities at the intramural and extramural research agencies of the U.S. Department of Agriculture (USDA). The funding should at the very least parallel the sector's growth and presence in the food economy. Policymakers should expand organic research by:
 - Increasing funding for the Organic Agriculture Research and Extension Initiative;
 - Updating the Agricultural Research Service's organic research agenda and funding its full implementation;
 - Updating and implementing the National Agricultural Research, Extension, Education, and Economics Advisory Board's recommendations on organic agriculture research;
 - Building on the success of the first Organic Production Survey, by creating the Organic Production Survey as a regular follow-on to the U.S. Census of Agriculture;
 - Building on the Economic Research Service's successful organic economic reports to ensure continued economic analysis of issues and trends in the organic sector; and
 - Creating set-asides for organic research within competitive grants programs such as the Agriculture and Food Research Initiative administered by the National Institute of Food and Agriculture;

- Ensure funding and coordination among USDA research agencies for the development of seeds, varieties, and livestock breeds appropriate for organic farming systems that are available publicly.

- Create an inter-departmental taskforce led by the White House Office of Science and Technology Policy to examine opportunities to integrate organic research into departments outside of the USDA.

Priority # 2:

Ensure Fair and Appropriate Risk Management Tools

Specifically, this means fair and appropriate insurance options, including:

- Appropriate crop insurance options for diversified operations, including expanding whole farm revenue insurance to all locations and raising the annual income limit;
- Eliminating the organic premium surcharge. An organic premium discount that would reward risk reduction from diversity should be researched;
- Insurance payouts based on organic prices for organic products, not on conventional prices. Organic input costs and organic land prices should be recognized;
- Extending disaster assistance to cover lost organic crops at organic prices, not conventional prices;
- Coverage for contamination from genetically modified organism (GMO) and pesticide drift damage to organic farms; and
- Extending coverage to grazed forage, double crops, and cover crops.

And, this means common sense regulations, including:

- Regulating pesticides more strictly to reduce risk of pesticide drift on organic farms;
- Regulating GMOs more strictly to reduce risk of genetic and pesticide contamination;
- Placing the liability for pollen drift on manufacturers and patent holders and shifting the burden of providing buffers to GMO and pesticide users; and
- Coordination between the National Organic Program regulations and existing and new regulations impacting agriculture, such as food safety regulations.

To do this, USDA must:

- Expand its data collection efforts on organic, including timely and accurate organic price collection and reporting.

Priority #3:

Meet Market Demand

Specifically, this means enabling access to organic food:

- Lift prohibitions on the purchase of organic food in the Woman, Infants and Children (WIC) program.

Enable Supplemental Nutrition Assistance Program recipients to buy organic at farmers' markets and elsewhere.

Enable government procurement of organic food in military, school, and Indian food service and assistance programs.

It also means maintaining and strengthening consumer confidence in the organic label by:

- Ensuring funding for the National Organic Program to perform oversight, enforcement, and regulatory functions.

Priority #4:

Create a Robust Organic Transition Assistance Program

- Provide coordinated forms of technical and financial assistance, including:
 - Planning assistance to meet the requirements of an organic system plan;
 - Business and marketing guidance;
 - Education about the standards and prohibited materials;
 - Annual payments during the three-year transition period that reflect income lost during the change in management system from non-organic to organic; and
 - Coordination with the Environmental Quality Incentives Program Organic Initiative and provisions of the Conservation Stewardship Program that provide assistance for the implementation of conservation practices relevant to organic systems.
- Fund research to address the unique challenges during transition to organic production;
- Collect data on the number and characteristics of transitioning farmers; and
- Explore the option of identifying through the supply chain products that are produced by transitioning farmers.

Priority #5:

Reward Environmental Benefits

- Ensure that organic farmers are rewarded and can participate in market-based systems of payments to farmers who provide ecosystem services to the wider society.
- Make use of the water quality markets that can be created as a result of the Clean Water Act in certain watersheds or river basins.
- Make use of the USDA's Office of Environmental Markets underutilized infrastructure as a clearinghouse for agriculture environmental credits including nutrients, wetlands, and carbon.
- Improve and fund existing conservation programs, such as the Conservation Stewardship Program and the Environmental Quality Incentives Program, so that they more appropriately serve and reward the environmental benefits of organic systems.



The Organic Farming Path Forward

Organic farming is an important, expanding economic sector that serves the public interest and should be supported by public policies. As demonstrated in this review of the scientific literature concerning the many benefits of organic farming, organic farming benefits human health, economic growth, and the environment.

The government should increase research that is responsive to organic farmers' needs, build integrated organic programs into every federally funded state university, and create farm safety net and transition assistance programs that work for organic growers. By building a broad and deep base of organic supporters and increasing the number of champions for organic farmers in Congress and Federal Agencies, these goals will be achieved.

About the Organic Farming Research Foundation

The Organic Farming Research Foundation (OFRF) is the only national non-profit champion of the American organic family farmer. Founded in 1990, OFRF promotes organic champions in Congress, integrates organic farming in agricultural universities, provides research that is responsive to the organic farmers' needs, and partners with organizations to secure the connection between organic farming and a healthy planet. Headquartered in Santa Cruz, California, with offices in Washington, D.C., OFRF knows that when an organic farmer succeeds, we all thrive.

Acknowledgments

The origin of *Organic Farming for Health & Prosperity* came as a suggestion of Thomas Dobbs. Thomas requested Organic Farming Research Foundation issue a comprehensive report on the “multifunctionality” of organic agriculture in the United States. The seed was planted and nurtured by OFRF Board of Directors, staff, and organic community. It is dedicated to the success of the American organic family farmer.

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About the Authors

Carolyn Dimitri, Ph.D., Research Associate Professor of Food Studies at New York University. Prior to joining the Food Studies faculty, she worked as a senior economist at the Economic Research Service of the U.S. Department of Agriculture for 12 years. Along with collaborators, she obtained several grants to conduct national surveys of certified organic handlers and food retailers to study firm behavior regarding marketing and procurement practices. Dr. Dimitri has an established record of economic research on organic markets, distribution of organic

products, and consumers of organic products. Her professional service includes participating on grant review panels and peer reviewing many academic articles. Dr. Dimitri earned her Ph.D. in Agricultural and Natural Resource Economics from the University of Maryland, College Park, and a B.A. in Economics from the University at Buffalo.

Loni Kemp has been engaged in policy work in the non-profit world for 30 years and has been an independent agriculture and conservation policy consultant for the past three years. Her expertise is in sustainable agriculture, environmental benefits, conservation programs, water quality, renewable energy, climate change, and related topics. Her primary focus for over a decade has been the Conservation Stewardship Program, the first whole-farm, working lands program explicitly designed to reward the multiple benefits of conservation. Clients of Kemp Consulting include the National Sustainable Agriculture Coalition, Natural Resources Defense Council, National Wildlife Federation, Union of Concerned Scientists, Institute for Agriculture and Trade Policy, USDA's Natural Resources Conservation Service, and several foundations. Ms. Kemp has an M.A. in Public Affairs from the University of Minnesota Humphrey Institute of Public Affairs and a B.A. in Urban Studies from Macalester College.

Jane Sooby has worked in organic and sustainable agricultural research for 20 years, the last 12 as the Grants Program Director for the Organic Farming Research Foundation. In this role she manages OFRF's grantmaking program and serves as an information specialist on organic farming and research. She was the lead author on the 2007 OFRF publication *The National Organic Research Agenda*. Sooby also documents organic research, education, and extension activity throughout the entire United States land grant system. Sooby holds a B.S. in biology from New Mexico State University and an M.S. in agronomy from the University of Wyoming.

Elizabeth Sullivan has spent over 30 years working at the intersection between politics and policy, working on environmental issues, education issues and social justice issues. Most recently, she served for five years as the President of Education Voters of America, an advocacy organization dedicated to ensuring that every child in America receives an excellent public education. Previously she served as the Executive Director of the League of Conservation Voters Education Fund for seven years. From 1985 - 1995, Ms. Sullivan was the managing partner of the Campaign Design Group, a political consulting firm that was largely responsible for the 1992 Boxer and Murray Senate wins, as well as the victories of hundreds of other candidates for public offices ranging from City Council to Governor to U.S. Senate. She serves on the Boards of Directors of Ocean Champions, dedicated to electing candidates who are champions for the ocean; and Higher Heights for America, dedicated to electing more women of color to public office. Ms. Sullivan has a B.A. in Philosophy from Dickinson College, a Master in Urban and Regional Planning degree from The George Washington University, and is currently pursuing a Doctor of Liberal Studies degree from Georgetown University.