

Reinventing Food Systems

By Marty Fujita

The entire history of agriculture—humanity’s grandest enterprise—occurred during the last 10,000 years; a mere blink of an eye in geological terms. As hunter-gatherers, we were dependent upon each other in a system that demanded social equity for survival. But by producing surplus food, agriculture opened the door to division of labor and the possibility of socially stratified societies in which farmers lost control of what they produced. As farming shifted from subsistence to commodity production in large parts of the world, gargantuan agribusiness corporations came to dominate a global system in which those who produce the food and work the hardest profit the least.

Humans developed farming in an exceptionally wet, warm, and stable period in Earth’s climate history. All of our current knowledge of seed saving, plant selection, sowing, planting, growing, and harvesting has relied on predictable seasons and weather patterns. How do we cope in an age of climate change? By the end of this century, climate scientists warn, average temperatures could rise by 4° Celsius (9° Fahrenheit)—a forecast that likely underestimates the impacts of dangerous feedback loops that are not included in most climate models. Weather patterns are predicted to become increasingly volatile with droughts, floods, and temperature extremes within seasons.

Although scientists are unable to predict the effect on any particular region, the warming is already altering growing zones, raising the prospect that the production of corn and soy, now centered in the Midwest, may shift northward into Canada. Rainfall patterns are changing as well. Farmers in the Northeast are experiencing wetter conditions and more intense rains, while California and the Southwest face long-term drought. Energy Secretary Steven Chu has warned of an ominous future: “Where there’s no more agriculture in California.”

The Consequences for Global Food Security

Soaring temperatures pose yet another threat to world food supply. The most important grains—corn, wheat, and rice—are extremely sensitive to

higher temperatures and are already being grown near the highest tolerable temperatures in the tropics and subtropics. A recent study examining 23 global climate models indicates that by 2100, growing temperatures in the tropics and subtropics will exceed the most extreme seasonal temperatures in recent history.¹ In other regions, valuable crops with narrow growth parameters, such as wine grapes, will be especially susceptible. Farmers will also struggle with a loss of pollinating insects and greater numbers of invasive weeds and insect pests that adapt more quickly than domesticated plants. As sea levels rise, salt water intrusion into wells will compromise irrigation systems on coastal farms.

In the near future, agricultural productivity is expected to rise as plants respond to increased levels of CO₂ in the atmosphere, but continuing climate instability will eventually decrease yields by 30 to 46 percent, by some estimates. In the later decades of this century, climate change will increase the number of people at risk of hunger, taking its greatest toll on the poor and most vulnerable.²

The current form of industrial agriculture, though highly productive, is very problematic because the large amounts of fossil fuels, fertilizers, and pesticides it requires produce CO₂ and the more potent greenhouse gases, methane and nitrous oxide, which represent 20 percent of the heat-trapping emissions driving climate change. Furthermore, the profits of large agribusiness corporations come at the expense

of underpaid farm laborers around the world. There is ample evidence that farm workers already suffer disproportionately from pesticide poisoning (about three to four million severe cases each year), heat-related death (they are twice as likely to die at work), and food insecurity, compared to other labor sectors.³

“Agriculture is a way of life for farm workers. If climate change is affecting agriculture, then it also affects farm workers and their survival,” says Yissel Barajas, manager of strategic labor initiatives for Reiter Affiliated Companies, one of the largest berry producers with farms in California, Oregon, and Florida. When strawberry production in Ventura County suffered after a prolonged winter and an excessively hot summer, farm workers, usually paid ‘by the piece,’ saw their wages decrease.

In Fresno County, located in the semi-arid south of California’s Central Valley, climate change-induced drought is already taking its toll. According to Edie Jessup, a food policy advocate who was born in a farm labor camp and grew up in the area, “Climate change and over-use of resources is impacting low-income people and their ability to feed themselves. It is tearing communities apart.” The arid Central Valley should



never have been developed for high water-use crops, she feels. “But once big investments have been made and associated systems created around it, it wants to be self-perpetuating... that means government subsidies. We made choices as a community that are no longer sustainable, and now we are suffering the consequences,” Jessup explains. “We need to re-regionalize our food and work systems [even if it means] a huge amount of social upheaval in the interim.”

Reinventing Agriculture, the Old-Fashioned Way

Clearly, we must reinvent the way we farm to make it not only less vulnerable to climate change, but also economically, environmentally, and socially viable. The new system must be regionally semi-independent, flexible, resilient, and able to adapt relatively quickly to changing conditions. It must minimize dependence on external pesticide and fertilizer inputs, especially fossil fuels, and employ farming methods that integrate intercropping and rotational practices and water, soil, and nutrient conservation. It’s likely that regionalized food and agricultural systems would have to be comprised of smaller individual farms growing a greater variety of genetically robust and diverse crops. Such a system will, of necessity, be more labor intensive, requiring an experienced, knowledgeable, and higher-paid permanent labor force, thus inculcating a more socially equitable system.⁴ Also, regional agriculture must be situated in areas that possess the richest soils and have the best long-term access to reliable water sources.

Regionalized agriculture will require land reform, access to markets, and international, national, state, and local policies that level the playing field among large and small producers and retailers.⁵ The current massive subsidies to agribusiness monocultures will have to be

Photo:

(Top) Mechanized agriculture still rules most California Farms. ©2009 Jorge-Mario Cabrera

(Bottom) Topa Elementary school in Ojai, California organic garden.



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reprogrammed to finance research and development of drought, flood, temperature, and pest resistant crop varieties in small and medium-sized farms.

Maricela Morales, associate executive director for the Central Coast Alliance United for a Sustainable Economy, a nonprofit with a mission to build grassroots power to realize social, economic, and environmental justice in California's Central Coast region, says that concern for climate change has finally led to concrete investments of money and policies to create a "green economy." However, "initial investments and policies have focused on energy (science, technology, efficiencies, manufacturing) and physical infrastructure (green buildings, retrofits, rehabilitation)," she says. "Federal, state, county, and city green economy investments and policies are needed to sustain agriculture and also develop 'green' agriculture that restores and protects the environment," she emphasizes, "and provides safe working conditions and living wage jobs with career pathways for all food producers, particularly farm workers."

Such a scenario is not impossible. Cuba went through a similar transition when its oil, fertilizer, and pesticide supply were cut off by the collapse of the Soviet Union. Today, Cuba is largely food self-sufficient and has developed one of the world's most extensive knowledge bases for organic and sustainable farming methods.

Towards a "Foodshed" Moment in Agriculture

In the United States and other countries, a new food movement that advocates for change is gaining strength. The proliferation of farmers markets, which decrease the links in the food chain as well as the "food miles" from producer to consumer, attest to this. So also does the growing interest in home, urban, and community gardens, farm-to-table programs, and locally-grown produce and artisanal food products. There is even a new term—"foodshed"—to describe a semi-autonomous, geographically designated food and agricultural area.

The transition from the current unsustainable agribusiness-dominated system to a regionalized food and agricultural system that is environmentally conscious, socially just, economically viable, and climate



resilient, will not occur without painful consequences. It may already be too late to avoid the catastrophic consequences of climate changes already underway, and the poorest and most vulnerable will undoubtedly suffer the most. Food shortages may cause mass migrations of people, as well as social and political upheaval. The relocation of growing areas may bring about a redistribution of resources, commerce, and population centers. But if we do not focus on mitigative and adaptive strategies, the severity of the outcomes may be even more extreme. ■

Endnotes

1. Battisti, David S. and Naylor, Rosamond. "Historical warnings of future food insecurity with unprecedented seasonal heat." *Science*. 323: 240-244. 2009.
2. Ibid. Also, Schmidhuber, Josef and Tubiello, Francesco N. "Global food security under climate change." *PNAS*. 104(50): 19703-8. 2007.
3. United Nations Environment Programme (UNEP), 2008; Centers for Disease Control and Prevention (CDC), 2008.
4. Heinberg, Richard. "50 Million Farmers" (Lecture Text). *Energy Bulletin* 22584. 2006. Howden, Mark, et al. "Adapting agriculture to climate change." *Proceedings of National Academy of Science*. 104(50):19691-19696. 2007.
5. Scherr, Sara J. and Staphit, Sajal. "Mitigating climate change through food and land use." *WorldWatch Report* 179. Washington, D.C. 2009.

Photo:

Food for Thought sponsors agricultural literacy programs for children at Gozo Farm in Ojai, California.

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Founding co-editor of the journal *Race Poverty & the Environment* and founder of the Center for Race, Poverty and the Environment.



Photos: (Above) Montage from the Luke Cole memorial booklet published October 25, 2009. Courtesy of Nancy Shelby.

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(Inside Front) Richmond refinery. ©2008 Scott Braley. (Inside Back) Urban garden in Havana Cuba. © John and Faith Morgan / www.powerofcommunity.com.

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