New Perspectives on Food Security

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Conference Proceedings

GLYNWOOD CENTER

AIRLIE FOUNDATION

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New Perspectives on Food Security

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"WE SHOULD LIVE AS
THOUGH WE ARE GOING
TO DIE TOMORROW,
BUT WE SHOULD FARM AS
THOUGH WE ARE GOING
TO LIVE FOREVER."

—David Wilson
(traditional saying)

New Perspectives on Food Security[1]

Judith LaBelle, Esq.

"Food security is not just about how we "protect" our food supplies and guard them against terrorist attack. It is about how we grow our food and how people gain access to it. It is about how we organize our businesses and our communities. It is about what we value in the global human family and how we use planet earth's finite resources. It is about what we value in our food and our families."

—Fred Kirschenmann

Background

In November 2004, Glynwood Center and the Leopold Center for Sustainable Agriculture convened a national, invitational conference on "New Perspectives on Food Security" at the Airlie Conference Center in Warrenton, Virginia. Participants were from the corporate, academic, and non-profit sectors and represented a wide range of professional backgrounds including economics, sociology, nutrition, food service, public health, systems theory, planning, agriculture, philosophy, and the law.

The purpose of the conference was to examine America's "food security" in light of its changing context. "Food security" is a term originally used by advocates seeking to raise awareness of the fact that in the midst of America's bounty some people still go hungry.

Post 9/11, the term reverberates with "homeland security" and raises the specter of potential terrorist threats to our food supply.

In between are growing concerns about other ways in which the "security" of our food system may be at risk, other ways in which it may be vulnerable to disruption, or reasons that its long-term sustainability may be questioned.

The conveners share the belief that small and mid-sized farmers play a critical—and virtually unrecognized—role in reducing the vulnerability of the system. They provide diversity, flexibility, and adaptability in the system; they use less foreign oil; they retain the human capital of knowing how best to farm in their place.

The conference was structured around a series of plenary Briefing Sessions interspersed with Working Sessions organized to allow in-depth discussion of food security from a variety of perspectives: systems, legal, economic, public health, environment, and public

1 Lead funding for the conference was provided by the W.K. Kellogg Foundation. Additional support was provided by the Surdna Foundation, the Global Resource Action Center for the Environment, Glynwood Center, the Leopold Center for Sustainable Agriculture, and the Airlie Foundation.

policy. Papers submitted by Briefing Session speakers and Working Session presenters are included in the Conference White Papers publication.[2]

The objectives of the conference were ambitious and included:

- first, to develop a deeper understanding of the state of our food system and how current trends are impacting its security
- second, to consider how these trends and potential governmental responses may affect all U.S. farmers
- third, to think realistically and creatively about how we can reshape our food system to improve food security while helping to keep independent farmers on the land and
- finally, to begin to develop a strategy for shaping the growing public debate about food security.

This document highlights major issues which may guide the reader to the extensive background materials. Where a point is covered in a particular paper, rather than having been culled from the discussion, reference to the author is provided. We hope that the ideas and materials generated through this conference will encourage more widespread discussion and effective action.

EXECUTIVE SUMMARY

How has the food system become vulnerable?

Over the past few decades, the structure of our food system has changed dramatically as a result of rapid horizontal and vertical integration of corporations in the food and agriculture sectors and globalization of both production and consumption. In most U.S. commodities today, four or fewer companies control 50 to 80 percent of market share. This is cause for concern since economic theory holds that when four or fewer firms control 40 percent or more of an industry's market, that sector loses the characteristics of a competitive market. Now, "...integrated food chain clusters [of corporations] are emerging globally that dominate food and agriculture from genes to the shelf." *(Hendrickson & Heffernan)*

When a few companies dominate within the food production and distribution system they can force prices down through the entire supply chain, right to the farm level. As a result, producer income is reduced while prices to the consumer remain above those that would be achieved in a genuinely competitive market.

> The dominant firms in processing and retail have increased their margins significantly in the last 10 years. For example, since 1994, the farm-to-wholesale spread in beef has increased by over 50% and in pork by over 43%. In poultry, processing companies have increased their net margin (wholesale price minus production and processing costs) by a whopping 193% since 1990. The wholesale-to-retail spread in beef and pork has increased by 35% to 37% in the last eight years. *(Stumo)*

The drive for ever lower prices pushes farmers to seek greater "efficiencies." For many, this has meant the shift to "industrial" farming which depends upon intensively fertilized row crops and confined animal feeding operations (CAFOs) in which hundreds and even thousands of genetically similar animals are raised in close proximity. The most recent Farm Bills from Congress have reinforced this trend by promoting maximum production while prices were lowered as a way to compete in export markets. The "law of unintended consequences"

[2] *Available at www.glynwood.org or a hard copy may be purchased through www.cafepress.com*

seems to apply since a system focused on increasing efficiency to generate "cheap" food and corporate profit appears to have created many unforeseen vulnerabilities as well.

As concern about "homeland security" has grown, the consequences of this reliance on industrial agriculture have taken on new dimensions. A recent RAND study commissioned by the Department of Defense, "Hitting America's Soft Underbelly: The Potential Threat of Deliberate Biological Attacks Against the U.S. Agriculture and Food Industry," found that there are "significant vulnerabilities" in the agricultural sector. At the heart of the factors causing these vulnerabilities are "concentrated and intensive contemporary farming practices" which would make it difficult to control contagious disease and livestock's increased susceptibility to disease as a result of changed husbandry practices and the "overuse and misuse" of antibiotics. Since many diseases that are fatal to livestock do not infect humans, the disease agents would be relatively easy for terrorists to work with. Moreover, the terrorist would not have to "weaponize" these diseases—the animals themselves would become the "vector" for their transmission. *(Chalk)*

The Department of Homeland Security recently ran a war game dubbed "Silent Prairie" to examine our ability to manage an act of terrorism against our agricultural system. As reported by Brian Halweil:

> When the simulation was over, the military and agriculture officials running it concluded that the American food system, perhaps the most technologically advanced and most competitive on the planet, was like a proverbial sitting duck. The miles and miles of cornfields planted in a single variety or the massive herds of genetically identical livestock are particularly vulnerable to any disease that is accidentally or maliciously introduced. The long-distance hauling of food also creates endless opportunities for contamination and spread.
>
> [...]After 45 days, 20 million imaginary animals had been destroyed. Losses totaled in the tens of billions of dollars, and public panic was leading to calls for martial law.
>
> The armed forces were called in to police borders. People in different towns were shooting each other because state governors ordered that anyone crossing state lines should be shot on sight. In the late stages of the exercise, the participants discovered they couldn't feed people in affected areas because of quarantines.
>
> As you can imagine, these results shocked the participants.

Halweil further reported that the recommendations made after Silent Prairie focused on logistics, including better communications and quarantine procedures, rather than addressing "...the underlying characteristics of how food is raised in the United States which make the system so vulnerable."

While terrorism presents a new and growing concern about the security of our food system, it is not the only one. "Industrial" production, undertaken in a drive for efficiency and lower costs, has many other impacts that undermine its own long-term viability and make the food system vulnerable to disruption. Some examples:

- **animal and human health.** Many CAFOs depend upon the routine (non-therapeutic) use of antibiotics to promote rapid animal growth and therapeutic use of antibiotics to help animals survive their conditions. This "...leads to the development of antibiotic-resistant bacteria which can be transferred to humans. This causes increased use of antibiotics in the

treatment of infections, increased severity of illness, and increased deaths." *(Clancy)* Proposals for protecting the efficacy of antibiotics used to treat human illness by banning their use in animals present a challenge for the industry that has relied upon them.

- **environmental impacts and human health.** Inadequate management of the concentrated waste from CAFOs has generated serious water and air quality problems. *(Hahn; Odefey*) Failure to require these facilities to manage their waste in effect provides a subsidy and puts environmentally responsible producers at a competitive disadvantage.
- **water.** Ninety percent of the waste generated by CAFOs is spread on the land "...without any form of treatment to reduce nutrient or pathogen concentrations. This situation has resulted in the production of excess levels of nutrients [nitrogen and phosphorus] beyond the capacity of the land to absorb as fertilizer." *(Odefey)* These excess nutrients run off and may contaminate both ground and surface water, with impacts on fish and other aquatic creatures as well as humans. Agriculturally generated nutrient overloads have played a major role in the development of "dead zones" in coastal waters which are devoid of life. The largest, where the Mississippi River empties into the Gulf of Mexico, is larger than the State of Massachusetts. *(Odefey)*
- **air.** CAFO emissions typically carry high levels of hydrogen sulfide and ammonia gas, both of which can cause illness and permanent injury to humans in the surrounding area. For example, studies have found that people living near large hog CAFOs have significantly more respiratory problems than people in communities without them. *(Odefey)*
- **reliance on fossil fuels.** When animals are not allowed to graze, fossil fuels are used to produce their food elsewhere and truck it to them. The animals must then be shipped to slaughter and market. With the exception of dairy products and specialty produce, "...the linkages between local production and local consumption have been broken for virtually all commodities." *(Lyson)* As a result, food typically travels between 1,500 and 2,500 miles from farm to table. This system of production and consumption has increased our dependence upon fossil fuels. As the cost of fossil fuel rises, demand from the Chinese and others increases and supplies begin to dwindle, making these agricultural practices no longer economical or sustainable. *(Salvador)*
- **farmers and their communities.** When shifting to industrial production, smaller farmers may become caught in production contracts under which they make just enough to avoid bankruptcy but become bound to their distributors through the debt they assume to convert to this style of production. Through the production contracts, the farmers cede to corporate managers the power to make decisions regarding how to manage their livestock. "By increasing the concentration of agricultural production in rural areas and ceding control over production to large agribusinesses, we will further shred the fabric of civic community." *(Lyson)*

In the long-term, the viability of the communities themselves is undermined—for agricultural purposes and as attractive places to live. "As pollution and over-reliance on petroleum-based fertilizers and chemicals take their toll, lands become less fertile, demanding increased inputs to maintain nominal production rates, exacerbating contamination-related problems in the long-run." *(Odefey)*

> As [large-scale intensive production] pushes more and more small farmers off the land and further diminishes rural air and water quality, farming communities will struggle to maintain the quality of life advantage that appeals to new and current residents. If the heartland's streams aren't fishable or swimmable (and approximately 40% of them aren't) and if the air isn't fit to breathe (as

> respiratory disease rates among farm workers seem to indicate), there is precious little that rural communities have to offer. *(Odefey)*

In some communities with CAFOs, land values have diminished by up to 90%, largely due to air and water pollution, undermining the equity of all residents. *(Odefey)*

Other less immediate, yet no less serious, threats to our food supply were also identified, including the impact of climate change and unsustainable use of water. The complexity of the system and the fact that different types of agriculture are subject to particular concerns became clear. For example, more than 85% of the fruits and vegetables produced in the United States, often on small and mid-sized farms, are produced in "urban-influenced areas," meaning that they are in the path of the development that continues to push out from urban areas into the countryside. Thus, the future of our most diverse production "...is intimately connected to development and land use decisions in communities across the country." *(Hamm)*

These vulnerabilities aside, has the current system served us well in other ways?

The current globalized system provides food in seemingly limitless variety for hundreds of millions of people. Americans participate in this bounty at a lower cost than consumers in most other nations. For example, the percentage of American family income spent on food remained at just over 10% from 2000 to 2003. This compares to approximately 15% spent in 2003 by consumers in France and Italy. Families in some other countries, such as South Africa and Venezuela, spent a substantially higher percentage, just over 30%.

Yet in spite of so-called "cheap" food prices and federal nutrition programs, in 2003 more than 36 million Americans lived in households that were "food insecure." Almost 10 million of these people lived in households that experienced hunger during the year. The problems initially identified by the term "food security" persist.

How can we make the food system more secure?

Insights gained from other perspectives suggest potential responses to the vulnerabilities inherent in our current system. For example, David Orr brought an ecological perspective to bear and concluded:

> A society fed by a few megafarms is far more vulnerable to many kinds of disruption than one with many smaller and widely dispersed farms. One that relies on long-distance transport of essential materials must guard every supply line, but the military capability to do so becomes yet another source of vulnerability and ecological cost. In short, no society that relies on distant sources of food, energy, and materials or heroic feats of technology can be secured indefinitely. An ecological view of security would lead us to rebuild family farms, local enterprises, community prosperity, and regional economies, and to invest in regeneration of natural capital.

Fred Kirschenmann has further considered the interplay of size and structure and reminds us that:

> ...it is not necessarily the size of our food enterprises that threatens their security, it is rather how they are organized. When systems are highly specialized, species dense, concentrated in one location, tightly coupled, and centrally managed using control management strategies, then they tend to be vulnerable. Systems that are diverse, dispersed, loosely coupled, and locally

managed using adaptive management strategies are more likely to be resilient and self-renewing, even when they are very large.

It is assumed that the national and global food systems will persist, although they will need to adapt to growing concerns about their "externalities" and major outside factors such as the price and availability of fossil fuel. However, strong local and regional food systems could complement those larger systems and provide valuable diversity (economic, genetic, and cultural) and flexibility, thereby enhancing our overall food security.

Regional food systems are emerging in various parts of the country, driven by factors including consumer demand and the growing recognition of their potential economic importance. So it was suggested that consumers strive for a "dynamic blend" of local food purchased directly from the farmer, local food purchased through others, regional food, and food produced nationally and globally. *(Hamm)*

The potential for consumer support of local and regional foods is tremendous. Each year, Americans spend $325 billion for food eaten at home and $239 billion for food eaten outside the home. If all families spent an average of just $10 per week for 20 weeks per year this would provide a $21 billion market. *(Hamm)*

Recent surveys have shown that a majority of American shoppers want to support sustainable farmers: over 80% are very or extremely interested in purchasing locally grown or produced food in grocery stores and 71% are willing to pay more for food grown locally. *(Hamm)* The concern for food quality is widely shared. Many "heavy organic consumers" have household incomes of less than $30,000. Approximately one-third of organic consumers are Asians, African-Americans, and Hispanics. Many report being motivated by family health concerns. *(Slama)*

The potential for consumers to support farmers and farmland within their own region is very high. It is estimated that if consumers were to begin to eat in accordance with the Federal Food Guide Pyramid, it would support approximately 5.6 million more acres of production in the United States. For example, if consumers in Michigan ate five servings of fruits and vegetables per day, they could support approximately 78,000 acres of farmland in the state. *(Hamm)* The high distribution costs inherent in the national system provide the opportunity for local foods to be priced competitively. *(Shuman)*

Similarly, industry experts believe that 24% to 50% of the organic food consumed in the Midwest could be grown and processed locally, providing a boon to the regional economy. The retail market for organic food in Chicago is estimated to be in excess of $300 million. Yet today, regional farmers produce only about 3% of the organic produce brought to Chicago-area stores and restaurants. The market for organic food in the states surrounding Chicago is even more significant—likely to range from $1.43 billion to $2.85 billion. *(Slama)*

It is no wonder that Mayor Richard Daly of Chicago has included the creation of a regional food system in his effort to make Chicago the country's "greenest" city. During the planning phase, the City is identifying opportunities for urban gardens, mapping the sources of supply within a 300 mile radius of the City, and undertaking zoning changes that would facilitate the recreation of a processing infrastructure. *(Dickhut)* A land trust protects community gardens—formerly vacant lots that serve as the basis for urban agriculture projects. *(Redmond)* The major thrust of this effort is economic development, but a result would be a strengthened regional food system and a higher level of food security.

Consumer demand has begun to encourage large distributors and retailers to try to find ways to integrate local and regional products into their current offerings. For example, the SYSCO Corporation, which has a 14% share of the food service distribution market in the country, has already begun a serious initiative to explore how this might be done. The most developed part of this effort is SYSCO's Minnesota Farmers' Market, which uses 700 cases of food from regional farmers per week. A basic assumption of SYSCO's effort is that "...all stakeholders must receive a meaningful profit for their contributions and efforts." *(Watson)*

Obstacles that must be overcome are already becoming evident: availability of sufficient product on a consistent basis, traceability, liability insurance of the grower/processor, and appropriate product attributes and pack sizes for the restaurant trade and distribution.

SYSCO is using new technology to begin to address these obstacles. They have developed and are testing an internet order entry system called ChefEx, with the goal of linking individual restaurants directly with suppliers rather than having SYSCO serve as the purchasing arm. Radio Frequency Identification technology may help to provide the traceability that will help ensure food safety. *(Watson)*

Changes are also being driven by chefs like Michel Nischan, who are actively encouraging the creation of new connections between farmers, distributors, and restaurants. Chef Nischan underscored the importance of what has been accomplished: "To emphasize what this means in real time: 15 years ago I made a dozen phone calls to get the equivalent of one produce delivery. Today, I can make three or four. The chances of my being able to make only one call have increased dramatically."

Challenges

While the number of consumers who purchase from local and regional producers is growing, they still represent a small portion of the population. David Wilson noted similarities between the situation in the U.S. and U.K. and concluded that "Decentralization is the way to produce some food security as well as reducing food miles, but it does require citizens who are loyal to localness and today few are."

Growing concerns about the incidence of obesity and related diseases such as diabetes have begun to increase attention on the importance of eating more fresh, nutritious, less processed food. Yet our palates have been trained to desire food that is laden with fat, calories, and salt and many people find it hard to give them up. The results are becoming evident:

> Through personal, political, and institutional practices, Americans have created a positive feedback loop that precipitously increases health care costs for obesity and its comorbidities. The American Obesity Association reports that the direct health care costs that obesity contributed to the top 15 causes of death were over $102 billion in 1999. *(Harris)*

The importance of race, culture, and class as complicating factors when trying to change attitudes toward food and farming cannot be overstated. LaDonna Redmond explained that:

> The legacy of slavery and the ensuing discrimination faced by freed slaves in the South created Jim Crow laws and has helped divorce African-American people from any desire to "work the land." For the African-American farmer, the small family farm did not represent freedom or independence as it did for immigrants during the early and mid 1800s. ...The fact that land stewardship cannot be central to an organizing strategy in order for urban communities to

> embrace sustainable agriculture is related to the negative connotation that many elders have regarding farming and the land.

Moreover, Keecha Harris explains that "Communities of color and poor communities are disproportionately impacted by lapses in food distribution networks and suffer the impacts of these disparities economically, environmentally, and personally." Access to fresh, healthful food is often very limited since these neighborhoods are generally served by fewer conventional food markets and the corner stores that predominate carry few fresh fruits or vegetables.

One response to this problem is being developed by the Austin Sustainability Project. Its approach involves community development and public health as well as improving access to fresh, local food in Chicago's Austin neighborhood. After a detailed assessment of the neighborhood, which found that there are 64 bodegas and only one supermarket, the project developed the vision of a grocery store that would sell fresh, local food and distribute it to bodegas. The store's ownership model is based on locally owned shares; sales will be restricted to Illinois residents and local residents will be encouraged to participate. If the new supermarket proves to be a success and chain stores locate in the neighborhood, having customers with a stake as shareholders may provide a competitive edge, helping to ensure long-term viability.

The importance of reasonable access has been proven through experience. The Food Project in Boston, which involves young people from urban and suburban as well as rural communities in the production and sale of fresh food, "...distributed over 100,000 pounds of produce in 2003 through sales and donations." *(Harris)* One study found that "African-Americans' fruit and vegetable intake increased by 32% for each additional supermarket in a census tract while that of whites increased by 11%." (*Harris)*

The connection between food and health is underscored by the unique situation of the Tohono O'odham of Southern Arizona. The Tohono O'odham's reliance on traditional foods was intentionally broken decades ago through government programs that forced youngsters to be schooled in settings that attempted to negate their culture. Only recently, in the face of the highest diabetes rates in the world, has it been discovered that chemical properties in the traditional foods that co-evolved with the tribe over centuries had an effect on their blood chemistry that prevented diabetes. The Tohono O'odham Community Action Food Project is helping to bring back the production of traditional native foods to restore both culture and health. *(Reader)*

The Way Forward[3]

Making our food system more secure and less vulnerable to disruption will not be simple or easy, but there are many different steps that will help. Some can be taken directly by consumers, some by producers. Some will involve the development of new policies and some the enforcement of existing legislation. Many will require changes in the way we think—about efficiency, the values that drive our choice of food, and our willingness to work in broader coalitions. A systems perspective helps us recognize that:

> Changing commodity systems, as with all of the elements of the transition to sustainability, isn't just about new policies or new best practices. In the end it is also about changing the way we think. Our understanding of efficiency will need to broaden from economic dimensions to include also social and environmental dimensions, and this broader understanding will need to be incorporated into the rules and incentives of commodity markets. *(Rice)*

[3] *Many concepts and recommendations were put forth in the conference presentations, papers, and discussion. Those included here are intended to suggest their breadth and diversity, not to suggest that consensus was attempted on which should be undertaken.*

Creating Broader Coalitions

Chef Michel Nischan suggested that:

> ...if we focus on forging the right strategic alliances and set aside some of our older fears and suspicions, we could be well on our way to a safer, more secure, and interestingly, more delicious food system. ...We need to capitalize on the fact that, as different as many of the folks are in the various areas of the food system, we all live in and love the same country.

The recognition of the need to create broader networks and coalitions was a thread running through the discussion. These networks need to encompass public and private sectors, non-profit and business enterprises—family farmers, livestock farmers, environmentalists, anti-hunger advocates, nutritionists, consumer groups, and business people. Given the impact of local land use and the important potential of local and regional food systems, there is a special need for innovation and collaboration at the community level.

These broader coalitions are important in securing support for policy initiatives and securing funding. We must keep in mind that food security involves nutrition, transportation, immigration, and many other federal, state, and local agencies, including the Office of Homeland Security.

Developing Stronger Regional Food Systems

As indicated above, significant discussion related to the importance of strengthening regional food systems and how we might do so. Other recommendations put forth included:

- The suggestion that we encourage more self-sufficient communities, which will "...keep the nation's food supply spread out and diverse and less vulnerable to any sort of perturbation, whether it's a spike in gasoline prices or a disruption to the transportation system or some massive crop failure." *(Halweil)*
- The expansion of food policy councils, which examine the operation of local food systems and recommend how they can be improved. The Hartford Food System, a leader in this work, has tackled a range of issues relating to access, cost, and nutrition.
- The expansion of farm-to-school programs, specifically including conventional producers as a way to encourage them to shift to more sustainable production. While providing a stable market for farmers, these programs build infrastructure to support local food systems and provide access to food for low income students.

Encouraging Changes in Production Methods

A major challenge will be encouraging changes in the production methods that cause vulnerability in the system. Many steps were recommended, including:

- encouraging more diversity in the food chain, including breeds of animals and varieties of crops as well as in the means of production
- encouraging less dependence on inputs transported long distances
- promoting non-confinement systems
- promoting sustainable production (whether organic or not)
- reducing the use of antibiotics for growth promotion
- stopping the use in animals of antibiotics used to treat human illness (such as tetracycline and penicillin)

If we more effectively meld the local, regional, national, and global, we can support local and regional agriculture for the value it provides in retaining the knowledge of how to farm in a particular place, genetic diversity, and regional access (if the larger system is disrupted).

In addition to strengthening regional food systems, the importance of supporting "farmers in the middle," wherever located, was also stressed. These farmers, who are too small to rely on commodity subsidies and too large to survive in niche markets, manage the majority of America's agricultural land. Companies like Niman Ranch, that provide marketing and distribution for meat producers in Iowa and other states that are not near major urban markets, provide critical infrastructure for these producers.

Enforcing Existing Legislation

It is important to enforce existing laws that can help improve food security in various ways. However, it may be necessary for private citizens and state agencies to undertake these actions rather than rely on federal initiative. For example, litigation brought by private parties was seen as a "viable option" to enforce antitrust laws to try to curb the "most egregious market abuses" in the food system. *(O'Brien; Stumo)* Private actions against CAFOs under the Clean Water Act, the Clean Air Act and the Resource Conservation Recovery Act (which relates to waste disposal) have all been important in efforts to force reduction of their environmental impacts.

It was also noted that it will be important to ensure that the U.S. Department of Agriculture (USDA) provides the new Assistant Secretary for Civil Rights with the resources and authority necessary to carry out the job and to allow fair access to credit and farm programs. *(Ozer)*

Developing New Policies

The importance of policy work has long been recognized. "Policy, whether on the local, state, federal, or international level, has a major influence on who farms, how they farm, who accesses affordable high quality food, and the viability of rural communities. Policy shapes who profits from the farm and food system and who loses." *(Ozer)*

Under current programs, as many as 94% of U.S. farmers are unable to earn a livelihood from their work on the farm. At the same time, the benefits of current agricultural policies are skewed toward producers whose annual sales exceed $250,000. Therefore, special emphasis was placed on identifying "...governmental policies that support a structure of agriculture in which a family engages in agriculture with the purpose of earning a livelihood from that activity." *(Ray & Shaffer)*

The 2002 Farm Bill did include some provisions that would encourage small and mid-sized farmers, including the establishment of the Conservation Security Program, the doubling of the annual funding for Community Food Projects, the requirement that USDA increase access to data and address civil rights issues, mandatory country of origin food labeling, and increased funding for Rural Development programs. However, the level of funding that will be provided remains in question.

Darryl Ray suggested that policies be tailored more closely to the needs of different types of farmers:

- large commercial farms: establish a floor on prices that will keep these farmers in business
- small to medium farms: Land Grant universities should shift research focus to develop new marketing and production techniques for these farms and

- "farmers in the middle:" direct support for on-the-farm storage to provide marketing flexibility and develop new crops. One suggestion: make energy production the next miracle crop. For example, switch grass is a perennial crop for biomass that can be converted to fuel.

Among the particular proposals noted was "The Food from Family Farms Act" being promoted by the National Family Farm Coalition. It would provide price supports for commodities rather than subsidies, on the theory that if buyers paid a price that met the farmer's cost of production, subsidy funds could be diverted to important food security programs such as the Conservation Security Program, sustainable agriculture grants, increased credit programs, outreach, Farm to Cafeteria, and new marketing initiatives. *(Ozer)*

Undertaking Needed Research

Several different kinds of research needs were identified, including:

- economic models showing how farmers can transition from (or at least diversify out of) commodities such as corn, soybeans and cotton
- new marketing and production techniques for small and medium farms *(Ray)*
- understanding how phytochemicals (chemicals found in plants) help prevent cancer and other diseases and whether organic and conventional production methods affect phytochemicals *(Clancy)*
- how to convince consumers to act on knowledge about the need to eat in moderation and the connection between food and health *(Harris)*

Recognizing the International Context

While the primary focus of the discussion was on increasing food security within the United States, several presenters helped place it within an international context.

From a systems perspective:

> The art of keeping commodity production within the capacity of the resource to regenerate, within the capacity of the environment to assimilate wastes, and within the capacity of producing communities to sustain themselves simplifies to a single principle. Feedback (information, incentives, regulations) about the state of the resource, the surrounding environment, and producing communities MUST be strong enough to counterbalance the inherent pressure to increase efficiency, scale, and level of production. *(Rice)*

From this perspective, the following potential solutions were identified:

- harvest and supply control agreements,
- global standards for environmental and social practices,
- certified commodities and increasing consumer demand for them, and
- subsidy programs for social and environmental goods rather than bulk commodity production. *(Rice)*

From a policy perspective, it was suggested that:

> The foundational set of policies that will benefit farmers worldwide is the institution of an international program of supply management for the major crops: corn, wheat, soybeans, and perhaps rice. There are three elements to

> this policy: (1) the establishment of an international humanitarian food reserve and (2) the institution of an acreage reduction program by the top two or three producers of a given crop coupled with (3) a storage program to maintain prices within a predetermined range. *(Ray & Schaffer)*

Some advocates working on the international level have developed the concept of "food sovereignty" to promote the right of each nation to determine its own policies based on the needs of its people, including farmers and workers. These include land reform, efforts to block genetically modified organisms (GMOs), free access to seeds, and "safeguarding water as a public good to be sustainably distributed." They promote fair prices so farmers do not have to rely on subsidies and protect the economy and the environment while restoring rural vitality and promoting access to food. *(Ozer)*

Conclusion

By bringing many different perspectives to bear on issues and trends relating to food security, we trust that this conference has generated information and ideas that will inform the growing public debate about food security and encourage realistic and creative thinking about how we can reshape our food system to improve food security while helping to keep independent farmers on the land.

Now we call on all who are concerned about these issues to join with us in carrying this effort forward by creating broader coalitions, encouraging changes in production methods, enforcing existing legislation, developing new policy approaches, and undertaking needed research.

JUDITH M. LABELLE

Judith has been actively involved in matters relating to the environment, land conservation, historic preservation, and tax exempt organizations for over twenty-five years. For several years, she was a member of the law firm of Berle Kass & Case, the first specialty environmental law firm in New York City. Thereafter, she served as Deputy Director and Counsel to the New York State Commission on the Adirondacks in the Twenty-First Century and as Corporate Counsel to the National Audubon Society before becoming the founding President of Glynwood Center.

Judith was a member of the Metropolitan and Rural Strategies Task Force of The President's Council on Sustainable Development and has participated in the Speaker's Program conducted by the United States Information Service in Italy and Germany. She has served on the boards of several non-profit organizations, including the Hudson River Foundation for Science and Education and the Scenic Hudson Land Trust, and as a gubernatorial appointee to the New York State Environmental Board.

Judith has been a Loeb Fellow in Advanced Environmental Studies at the Graduate School of Design at Harvard University and a Root-Tilden Fellow at the New York University School of Law, where she earned her Juris Doctor degree. She has been a member of the Executive Committee of the Environmental Law Section of the New York State Bar Association and co-chaired the Section's Fall 2003 Program: "Promoting Better Land Use Decision-making: "The Attorney's Role."

Welcome and Challenge

Judith LaBelle, Esq.

On behalf of Glynwood Center, the Leopold Center for Sustainable Agriculture, and the Airlie Center, it is my pleasure to welcome you to "New Perspectives on Food Security."

How did we come to be here?

In late 2002, we at Glynwood were working with the Leopold Center, the Institute for Agriculture and Trade Policy (IATP), the Sustainability Institute, and others, trying to understand how we could generate more media interest in the plight—and the promise—of family farmers, small and mid-sized farmers, and "farmers in the middle".

Colleagues from the media helped us understand that "food security" could provide the framework for a discussion of many different reasons why independent small and mid-sized farmers are vital to our food security, however it is defined.

Post 9/11, most Americans assume that the threat to food security is terrorism. And indeed that is a threat and one that we will discuss.

But there are other reasons why our food supply has become increasingly vulnerable to disruption—why what the RAND Corp. study termed the "soft underbelly of American agriculture" has become so very big and so very soft. Prime among them is the corporate concentration that has been changing the face of the food and agriculture system over the past few decades.

Most Americans have no idea how few corporations dominate key parts of our food system. They are shocked to learn that Wal-Mart has become the largest food retailer in the U.S.

Nor do they understand how corporate concentration has reduced the choices available to farmers and consumers and shifted power from elected bodies to corporate boardrooms.

A key concern of the conveners of this event is that in the rush to protect this highly concentrated system from terrorism, the government does not implement measures that undermine small and mid-sized farmers.

For we believe that these small and mid-sized farmers play a critical—and virtually unrecognized—role in reducing the vulnerability of the system. They provide complexity, flexibility, and adaptability in the system; they use less foreign oil; they retain the human capital of knowing how best to farm in their place.

And so to the challenges that we lay before this group:

- first, to develop a deeper, more nuanced understanding of the state of our food system and how current trends are impacting its security
- second, to consider how these trends and potential governmental responses may affect all U.S. farmers and
- third, to think realistically and creatively about how we can reshape our food system to improve food security while helping to keep independent farmers on the land and

- finally, to begin to develop a strategy for shaping the growing public debate about food security. In an atmosphere where "cross fire" and "hardball" have replaced public dialogue and sound bites are passed off as reasoned reporting, this may be the greatest challenge of all.

But we think you are up to it.

The potential represented in this room is tremendous. You are from several states and more than one country. Some of you are deeply focused on one region; some of you work nationally, some internationally.

Your professional backgrounds are similarly diverse. You include academics, scientists, lawyers, government officials, leaders in the non-profit and the business communities, farmers, and chefs.

You bring expertise in food systems, systems theory, public health, the environment, ethics, corporate and antitrust law, economics, community development, rural sociology, public policy, the media, and more.

Some of you have a long and deep commitment to issues relating to food security; for some it is a newer interest or a topic that you have focused on in response to our request.

We may not accomplish everything in the next day and a half, but we can make a start. As we learned last night, the idea for Earth Day started here at Airlie.

The shape of the ideas that will be generated here is now in your hands, but we will do our best to capture them so they can be widely shared. We will make this material available to all of you in the hopes that you will use it to generate interest and support among media and policy makers in your networks, and that it will support whatever next steps are identified through these discussions.

And so, let's begin...

A Brighter Food Future

Michel Nischan

I'd like to speak about the dream of a brighter and more secure food future. I come to this dream from the place of chefs and farmers. Both my parents come from farm families and I grew up wishing I could be a farmer, while not fully understanding why I couldn't until I learned math. So instead, I decided to become a chef—an act that might imply that I hadn't learned math at all. I say this because it's well known that restaurants don't make a lot of money. Some do, but most do not. Nevertheless, cooking—like farming—is all about good food, camaraderie, and genuine hospitality. It's also about hard work.

I loved learning what little I know about farming when I visited my grandfather's farm in Morley, Missouri when I was a kid. I loved farming because I loved the food that came from the farm and the way my relatives cooked it. My mom was the best cook in the family (something all my aunts and uncles begrudgingly admitted to). She taught me how to cook in the traditional ways of the Southern-Midwest country farmer. If you've ever had the privilege to experience this approach to food and farming—the way it truly used to be—you can't help but love it deeply. With all this in mind and the realization that farming would never become a reality for me, the restaurant business made sense for me.

I spent a lot of my time chasing good food during my early years as a chef. When I cooked in Wisconsin, I would take my cooks out to Oconomowoc to pick wild asparagus after a long spring rain so we could cook the best possible asparagus for our guests. When I cooked in Connecticut, I would drive to New Milford twice a week to get my pig. I would make a dozen phone calls a day just to place my produce order because I was buying as much as I could from farmers. That was all about 15 to 20 years ago. Today, thankfully, it's a bit easier to get great local food, though there remain some serious challenges in doing so.

An unexpected and life-altering chapter in my story as a chef began when my son, Chris, was diagnosed with diabetes 10 years ago. Chris's diagnosis caused me to realize a deeper importance and necessity to support a local, nutritious, and healthful food supply. Recently, my three year old son, Ethan, was diagnosed with type-1 diabetes. This highlights the importance of well-being in my approach to cuisine. In short, Chris's diagnosis led me away from old perspectives on how we are what we eat, towards a much deeper understanding of the interconnected relationship between food and human and environmental health. Ethan's diagnosis drove this understanding home.

Today we're talking about food security. We often think of food security in terms of what might happen if the wrong guy gets his hands on a crop duster, or if someone releases a biological agent that could easily wreak havoc on our monocultural food system. What if someone blows up a dozen bridges that span the Mississippi? These are all real concerns. However, I feel there might be more subtle dangers to our food security that are

equally onerous. For instance, if our food system is creating childhood obesity and diabetes at alarming rates while damaging the sustainability of our watersheds and fisheries, is this not a threat to our national security? If the conventional production and distribution of food creates more disease and poverty than it cures, is this not a threat to our security? And if the costs of cleaning our environment and the costs of treating those who are sick from the way our current food system works begin to bankrupt our national economy, is that not a threat? Finally, if the despair of hunger caused by a lack of access to food gnaws away at the patriotism of any group of Americans, how secure can we truly be? Indeed, there are many food-related threats to our security. Some are more obvious than others, some more catastrophic and sensational than others, but all should be of serious concern.

I personally believe a brighter food future is just what we seem to be on the cusp of. I know this is hard for many to believe, and I don't mean to imply that we still do not have a long way to go. But we now are so much closer to realizing this dream than ever before. Farmers' markets and CSAs are opening in record numbers and in the most unlikely of places. The category of natural and organic foods is the only growing segment in retail food sales at a consistent rate of 30% per year. Advances in sustainable fisheries and responsible animal husbandry are becoming easier for the public at large to see and, even better, to taste. To emphasize what this means in real time: 15 years ago I made a dozen phone calls to get the equivalent of one produce delivery. Today, I can make three or four. The chances of my being able to make only one call have increased dramatically. I think there are tremendous opportunities here as we see these small, sustainable, organic business segments enjoy success caused by our slowly changing food system. More exciting to me is how some of the larger businesses are beginning to come to the table. There is a bigger demand for these foods than a lot of people think.

Many of my colleagues and friends (some are chefs, some are not) acknowledge that there has been an explosion of interest by the dining public to get better foods, fresher foods, heirloom foods, more local foods, to know the story behind the farmer and the foods. I believe the answers to some of these issues are to begin reaching out to the existing larger companies and striking up creative, strategic alliances to figure out how to do some of this work together.

Unfortunately, there are still dark clouds. Large segments of mid-sized farmers—the folks who put the food on our tables and the tables of other countries—have serious trouble paying their own mortgages or feeding their own families. We see man-made environmental blights like oxygen depletion decimating the very fisheries we're trying to manage and sustain. We see the majority of shelves in our grocery stores stocked with foods that, because of special interest food policies and the surpluses they create, are produced in a way that make them potentially as dangerous to human health as nicotine. Indeed, there is more to do than has been accomplished, but I challenge you to show me a farmer, chef, or other food system visionary who doesn't thrive on this kind of challenge.

The space between the amazing progress made and the long fight ahead creates real tension, but this kind of tension is what makes our work rich and necessary. There are tremendous opportunities as we begin to see small, sustainable, and organic business segments enjoy success caused by a slowly changing food system. More exciting is how larger food service businesses are showing interest and, in some cases, commitment toward changing the way our food system works. This is all good news, but it is new news, and getting all the various players to work well together can be quite complicated. However, if we focus on exploring the right strategic alliances and set aside some of our older fears and suspicions, we could be well on our way to a safer, more secure, and interestingly, more delicious food system.

I've learned a lot of things in the past fifteen years as I worked my way through a variety of hotels and restaurants, like how to be more innovative in my approach to restaurants as businesses and that sometimes in a business known for slim margins, you have to think in unusual ways or use unorthodox methods.

Most recently, I was Area Managing Director of Food and Beverage at three W Hotels in Manhattan as well as Executive Chef at the W Hotel on 49th Street. The W on 49th was special because of the restaurant I ran there called Heartbeat. Heartbeat was the first and likely only hotel restaurant that served organic, sustainable, farm-direct food. This was groundbreaking because hotel companies are very uncomfortable buying food outside of the secure world of approved purveyors and contract pricing. And trust me, a lot of folks from W lost considerable sleep during the five years I managed there. But, as scary as my tactics were, they worked. We proved that, given the right business environment and infrastructural tools, serving farm-direct food can be profitable. We made or beat our budget every quarter of the five years we were in operation with the exception of the quarter of September 11, 2001.

Basically, this is how we did it. First of all, in a hotel you have some diversity—diversity of revenues. For a white tablecloth restaurant that wants to be an organic, farm-direct restaurant, the expense is incredible. There's only so much cost that you can pass on to the customer. In a hotel, you have banquets, weddings, and conferences. With these events, the food doesn't cost a lot of money. The revenue opportunity is much higher than the costs you are expending. So what we did that was revolutionary was to get The W to agree that if we could meet our budget by hitting the overall food and beverage costs including labor and the costs of goods, infrastructure costs, etc. against all sales, then we could have operating autonomy. They agreed.

So what followed was kind of a "no-brainer." The higher cost restaurant was 80% organic, sustainable, and farm-direct. The banquets were somewhat farm-direct but mostly conventional. Our strategy allowed us to do $3.5 million dollars of business at Heartbeat as an organic, sustainable restaurant. The next step was to bring Heartbeat to the point where it would stand on its own without the banquet business.

We decided to look at menu mix. We achieved menu mix at Heartbeat by introducing the notion that we wouldn't always have steak on the menu, but we would always have beef. We weren't always going to have a double-cut pork chop, but we would always have pork on the menu. So, if you're using bellies, flanks, or shoulders and braising, or doing real Yankee Pot Roast using the secondary cuts of meat that no one really wants to use, you can run a low food cost. We looked for ways to save money everywhere we could, like getting our dishwashers involved in the cooking process. They were butchering meat, cleaning fish, or shucking oysters. We no longer had to play restaurants against banquets. On its own, the restaurant was running 29% food costs. It wasn't easy. Sometimes it was hard to hire people who embraced these ideas or difficult dealing with hotel management. But there are many unique opportunities in the restaurant business for chefs who want to go in this direction.

So, in moving forward to forge strategic relationships and to uncover and take advantage of uncommon business practices, we need to keep our minds open to the unexpected. We need to capitalize on the fact that, as different as many of the folks are in the various areas of the food system, we all live in and love the same country. Earlier today I saw a map that showed the country not as red or blue states but rather as various hues of purple. It was our beliefs, convictions, skills, and talents that created the mosaic that was the dream for our national

community. Let's not allow those with intense individual political agendas to color us black and white or blue and red. Let's be purple and work together to get the damned job done!

We have a lot of work to do and the next few days should set the tone for some great and important ideas—many a stone to turn over and a few to leave alone. All in all, it's a new day at the office and time to get something done. Roll up your sleeves, plunge in, and think purple!

MICHEL NISCHAN

As a renowned chef and best-selling author, Michel Nischan is credited with creating a cuisine of well-being, focused on a respect for pure ingredients and intense flavors without the use of cream, butter, processed starches, or processed sugars. The inspiration to explore full-flavored cooking without such indulgences came in 1994 from his son Chris who, at age five, was diagnosed with Juvenile Diabetes. Michel debuted his revolutionary cuisine at Heartbeat Restaurant at the W Hotel in 1997 and was immediately propelled to the forefront of New York's culinary scene. He recently won a 2004 James Beard Award for his first cookbook, "TASTE, Pure and Simple" (Chronicle Books; 2003), a New York Times and Wall Street Journal best-seller. Michel's current clients and projects include work with the W.K. Kellogg Foundation's Food and Society Conference, the Ross School, The French Culinary Institute, Song Airways, and the Taj Luxury Hotels Group in India. Michel resides in Fairfield, Connecticut with his wife, Lori, and their five children.

Plenary Sessions

Mary Hendrickson, Ph.D.
Co-Director, Food Circles Networking Project, University of Missouri

CAN CONSOLIDATED FOOD SYSTEMS ACHIEVE FOOD SECURITY?
Analyses the structure of our globalized, industrialized food system and the difficulties in creating food security for all people.

Brian Halweil
Senior Researcher, Worldwatch Institute

FARMLAND DEFENSE: HOW THE FOOD SYSTEM CAN WARD OFF FUTURE THREATS
Reviews vulnerabilities in the food production, processing, and distribution systems, including those identified through a Department of Homeland Security "war game."

Peter Chalk, Ph.D.
Associate Political Scientist, Rand Corporation

REPLACE THE WEAK LINKS IN THE FOOD CHAIN
Examines specific factors in our livestock production and transportation systems that make the food industry highly vulnerable to deliberate and accidental disruption.

Michael Hamm, Ph.D.
C.S. Mott Chair of Sustainable Agriculture, Michigan State University

THE FOOD SYSTEM: A POTENTIAL FUTURE
Presents a framework for building sustainability into the food system.

Craig Watson
Vice President, Quality Assurance and Agricultural Sustainability, SYSCO Corporation

EMERGING CORPORATE STRATEGIES FOR WORKING WITH SMALL-SCALE PRODUCERS AND MAKING THEIR PRODUCTS AVAILABLE REGIONALLY
Presents SYSCO's initiatives in supporting sustainable agriculture and working with small-scale producers to meet regional and national demands for local food products.

Jim Slama
President, Sustain USA

FAMILY FARMED.ORG: CHICAGO AND A VALUES-DRIVEN FOOD SYSTEM
A discussion making the business case for Chicago's innovative plan to be the "Greenest City in America," including a regional organic food system.

David Wilson
Farm Manager, Duchy Home Farm at Highgrove

SUSTAINABLE AGRICULTURE FOR SECURE FOOD PRODUCTION
Outlines the principle threats to sustainable agriculture and food security.

Fred Kirschenmann, Ph.D.
Director, Leopold Center for Sustainable Agriculture, Iowa State University

THE CONTEXT OF FOOD SECURITY
Reviews the challenges presented by the structure and organization of the food system, with a challenge to develop ecological, community-based, and economically viable food and farming systems.

Can Consolidated Food Systems Achieve Food Security?

Mary Hendrickson, Ph.D. and William Heffernan, Ph.D.

Our task here is to briefly describe the evolving structure of today's globalized, industrialized food system—focusing on describing the major players in the food system, from those who provide the genetic material to those who sell our groceries—and to question the implications of such a system for food security. It is extremely important to understand that our emerging global food system is predicated on the idea that markets will provide consumer welfare (e.g., cheap food prices) by increasing the efficiency of agricultural producers and the supply chains in which they participate. In such a system, the goal of food security for populations across the world is essentially left to the market to provide. Posing questions about food security and citizen well-being therefore becomes even more critical.

First let us describe today's food system. If we start with seed, and therefore the very genetic material of our food, we see that five firms dominate the genetics for most of the crops that are grown world-wide: Bayer, Monsanto, DuPont (Pioneer), Dow, and Syngenta. The same pattern of concentrated markets is occurring in the "protein sector" where the markets for meat and dairy have concentration ratios (the percentage of the market that the top four firms control) that range from 56 to 83 percent. When four or fewer firms control 40 percent or more of an industry's market, that sector loses the characteristics of a competitive market.

The largest protein firm in the world, Tyson Foods, is the largest beef and chicken processor, with almost a third of U.S. slaughter in beef and broilers, and ranks second in pork processing in the United States. Smithfield is the largest pork producer in the United States, with over 800,000 sows in production, and the largest pork packer (enhanced by its recent acquisition of Farmland Foods, a leading farmer cooperative). Cargill's Excel meat processing company ranks second in beef processing and fourth in pork packing. ConAgra, until recently a large player in the protein sector, sold its pork and beef concerns to an investment firm that operates under the name Swift & Company. In addition, ConAgra recently sold their poultry operations to Pilgrim's Pride, placing that firm second in the number of broilers processed in the U.S. These same firms show up as large processors across the globe, where Smithfield is the largest pork processor in Poland and second largest in France, with large production facilities on the ground in Brazil and Mexico. Cargill is a large meat processor in both Canada and Australia.

Major grain crops exemplify the same trend. In the U.S., four firms—Cargill, Cenex Harvest States, ADM, and General Mills—control 60 percent of the terminal grain handling facilities, while Cargill and ADM (combined with Zen-Noh) export 81 percent of U.S. corn and 65 percent of U.S. soybeans. In addition, 68 percent of our American flour

milling is controlled by three firms, including ADM, ConAgra, and Cargill, and 80 percent of the soybeans are crushed by the top four, including ADM, Cargill, and Bunge. Bunge is the largest oilseed processor in the world. Commodity traders will verify that almost all the grain that moves between nations passes through Cargill, ADM, or Bunge.

In addition to agricultural commodity markets losing their competitive nature, integrated food chain clusters are emerging globally that dominate food and agriculture from genes to the shelf. While dynamic changes still take place, we are essentially seeing the emergence of a new structure in food and agriculture. The clusters identified in 1999 were Cargill/Monsanto, ConAgra, and Novartis/ADM. The clusters started with access to genetic material (the seed firms) and worked down through grain and animal procurement, processing, and food manufacturing. Although the clusters have changed, integrated clusters dominate agriculture and food production around the world. For instance, ConAgra has exited much of the middle by selling its protein processing and agricultural input concerns, while the Novartis/ADM cluster has undergone significant changes with ADM buying Farmland's grain operations, Novartis combining seed and chemical operations with AstraZeneca to form Syngenta, and IBP absorbed by Tyson. Cargill has developed joint ventures with Dow and Hormel while restructuring itself to become more than a commodity trader. Other firms, like Bunge, Tyson, and Smithfield, are positioned to form other food chain clusters. Although these clusters stop with food manufacturing, food retailing has seen the biggest changes since the mid 1990s.

Currently, about five to six retailing firms are emerging on the global level, with Wal-Mart a key contender. Every continent has seen the penetration of the giants of food retailing, even into the poorest of the poor regions. As these firms gain market power, they will be able to dictate not only price but also production practices back to the processors and producer-farmers through the supply chain. No matter how big Tyson or ConAgra become, they must go through a food retailer to ultimately reach consumers. The more consumers that are funneled through one entity (such as Wal-Mart), the more powerful that entity becomes in being able to set its own prices to pay suppliers.

One of the most important issues raised by the globalizing structure of the food system is who makes the decisions about what is produced and consumed and on what basis these decisions are made. The structure briefly described above means that decisions about who produces our food, what food is produced, how it is produced, and who gets to eat that food have been steadily moving from the more public realm of debate and dialogue to the more private realm of corporate boardrooms. As the structure of the marketplace has changed for farmers, the decisions they can make about what plants and animals to use in their farming operations have been severely constrained. The vast amount of food grown on today's farms is already destined to move inexorably through one of the food chain clusters that we have documented. In addition, consumers who rely on major supermarkets, chain restaurants, or institutional food services to supply their food needs face more limited choices, a counterintuitive argument given the vast array of produce available in supermarkets. However, finding "heritage" turkeys at Thanksgiving or homegrown heirloom tomatoes at their harvest peak is nigh impossible outside farmers' markets or specialty retailers.

The implications of such a system for the food security of populations around the world are critical. It is important to understand that at present, firms have a very specific role in the food system. Corporations are chartered to make money for their stockholders. This is the honest goal of all corporations and it permeates the activities and decision-making of such organizations. The firm's decisions are based on what generates the most income for the

firm. Over forty percent of the world's population has a daily income of two dollars or less, which translates into an annual income of less than eight hundred dollars per year. Food firms focused on increasing their income to stockholders will not be very interested in focusing their efforts on these people when they can focus on affluent consumers with thousands of dollars a year to spend. A question to be asked is: Who is going to feed the one half of the world's population that has low incomes?

Given the state of our agricultural economy, another question that may be posed is: Do we need U.S. farmers? Steven Blank, an economist from the University of California Davis, has suggested that consumers in the U.S. could buy their food from poorer countries cheaper than it can be produced in the U.S. Thus, he proposes we buy U.S. food from poor countries and use our land for urban expansion and recreation. This further supposes that regardless of where the food is produced, consumption of the food will depend upon one's income.

Whatever the merits advanced in defense of the global economy for other sectors of the economy, the question to be raised as it relates to food is whether adequate food is a right or a privilege. The evolving food system suggests that those who have a good income will be able to obtain food regardless of where they live and where or how the food is produced, but those without adequate incomes will be left out. Corporations are not chartered to be charitable organizations.

Another question to be raised: Is the food system so unique that it requires special policies? We think that inadvertently the World Trade Organization (WTO) is just now beginning to understand that food is different from other goods and services that are exchanged in the global economy. As the country representatives gathered in Cancun recently, agriculture, which we prefer to think of as food, was the focus of major disharmony. Some argue the future of the WTO may be at stake if this issue cannot be resolved. Are they willing to admit food is unique or face the demise of the WTO?

MARY HENDRICKSON

Dr. Mary Hendrickson is the co-director of the Food Circles Networking Project, an outreach program that links farmers and consumers together in a local food system, at the University of Missouri (MU). She is also the associate director of MU's Community Food Systems and Sustainable Agriculture Program located in the Department of Rural Sociology at MU. Mary has helped numerous agriculture groups with marketing strategies and cooperative development, including Ozark Mountain Pork, LLC, a natural pork cooperative. She also collaborated with Kansas and Missouri dairy producers interested in alternative markets for milk. Mary served as president of the Community Food Security Coalition from 2001-2003. In 2002, she was appointed by the City of Columbia to the Sustainable Food and Communities Board of Directors. Mary is the recipient of the 2001 Cooperative Service Award presented by the National Farmers Union. She also received the Family Farm Leadership Award given by the Missouri Farmers Union in 2000.

Farmland Defense: How the Food System Can Ward Off Future Threats

Brian Halweil

The Department of Homeland Security recently ran a war game, code-named Silent Prairie. It tried to assess how our nation would fare against an act of agricultural terrorism—that is, if someone introduced Foot and Mouth Disease onto a big Western cattle ranch or sprayed a corn fungus over the Midwest or introduced a deadly *E. coli* strain into a food processing plant.

When the simulation was over, the military and agriculture officials running it concluded that the American food system, perhaps the most technologically advanced and most competitive on the planet, was like a proverbial sitting duck. The miles and miles of cornfields planted in a single variety or the massive herds of genetically identical livestock are particularly vulnerable to any disease that is accidentally or maliciously introduced. The long-distance hauling of food also creates endless opportunities for contamination and spread.

In one phase of the exercise, participants looked on with alarm as the simulated virus raced across America. Within a week, only portions of New England, Hawaii, and Alaska were unaffected. After 45 days, 20 million imaginary animals had been destroyed. Losses totaled in the tens of billions of dollars, and public panic was leading to calls for martial law.

The armed forces were called in to police borders. People in different towns were shooting each other because state governors ordered that anyone crossing state lines should be shot on sight. In the late stages of the exercise, the participants discovered they couldn't feed people in affected areas because of quarantines.

As you can imagine, these results shocked the participants.

However, this shock didn't seem to inspire any serious rethinking about this sitting duck. Most of the solutions could fairly be called "window dressings." They focused on logistics: better communications between State Departments of Agriculture in the event of an outbreak, more rapid quarantine procedures, fax and email lists to alert the relevant authorities, and seminars to educate farmers about what to do in the event of an outbreak.

Virtually none of the solutions actually addressed the underlying characteristics of how food is raised in the United States which make the system so vulnerable. It turns out that three of the defining aspects of our food system all represent potential points of vulnerability to intentional or unintentional disruption of the food chain: the very low level of biological diversity, the high degree of economic concentration, and the dependence on food coming from far away.

First, consider the highly uniform and large-scale crop fields and livestock herds that dominate our farms. Many dairies in the country now have more than 10,000 animals. The size of the average hog farm has nearly doubled in just the last five years, from 1,300 to 2,300 hogs. Smithfield prides itself on the fact that the 16 million hogs it raises each year are nearly identical animals.

This isn't news to most of you, and we've heard the long list of social, animal rights, and ecological problems created by these conditions, from workers under extreme stress to animals under extreme stress to mountains of manure that overwhelm the nearby land and soil. But we're probably less familiar with the security implications.

When a large number of animals are concentrated in a dairy, for example, this allows any sort of disease agent to spread rapidly, particularly if it's an airborne bug like Foot and Mouth Disease.

The scale of these farms also makes it virtually impossible for the farmer or a veterinarian to monitor all the animals on a regular basis, making them unaware of an outbreak until it spreads to the entire herd.

This uniformity is often considered a sign of technological sophistication that greases efficiency and economies of scale. But the farms are biologically more fragile. Sterilization programs, dehorning, debeaking, crowding, and hormone injections all combine to elevate the stress levels and reduce the immunity of livestock to any sorts of pathogens.

Lay on top of this a poorly paid and poorly trained workforce, working under some of the most dangerous conditions in the American workplace—workers who are supposed to be our first line of defense against foodborne illnesses.

Meatpacking is already the nation's most life-threatening occupation, so the safety of the food chain is probably not the primary concern for workers who are struggling to avoid being mauled by mechanical knives or ducking half-ton carcasses moving by at breakneck speed. Yet in many ways, these people, and the conditions at these plants, form an unlikely first line of defense against foodborne illnesses.

The highly centralized nature of our nation's farms and food processing operations also creates endless opportunities for contamination and spread. Right now in this country, just three companies, Tyson, Smithfield, and ConAgra, process the majority of the meat that Americans eat, often in plants that ship out tens of millions of pounds of meat each week. Any contamination at one of these plants can very quickly affect millions of Americans around the country—a perfect dissemination route for a biowarfare attack. As agroterrorism expert Peter Chalk has noted, the animals themselves become the weapon.

The specialized nature of these operations also makes them dependent on daily deliveries of massive amounts of feed, straw, medicines, and other inputs, all of which represent potential avenues of introduction and movement of disease.

And this consolidation continues to grow at every link in the food chain, not just in the meat sector. "Don't put all your eggs in one basket," goes the advice that was once doled out by farmers but has now become common currency among Wall Street investors. Even economists and politicians who might be staunch free-traders would likely agree that raising the nation's food in a declining number of places, planted in a declining number of crop varieties, and processed in a declining number of factories, is simply foolish. They might even call it a recipe for disaster.

When Foot and Mouth Disease began to spread across the United Kingdom last year, conspiracy theorists argued that the attack was an act of biowarfare, an intentional introduction meant to torpedo the British economy. While that conspiracy is debatable, there is no doubt that the long-distance hauling of British livestock from the farm to the handful of centralized slaughterhouses in the United Kingdom exacerbated the spread, and that an earlier outbreak of the disease in 1967 did not spread as fast or as wide because most of the slaughtering and packing of meat was handled locally.

This leads to the final element of vulnerability: the long-distance nature of our food supply. Today, everyone depends on food coming from farther and farther away. In the United States, the average food item travels between 1,500 and 2,500 miles from farm to plate. That's about a 25 percent increase in the last two decades.

The farther food travels and the more times it changes hands, the more likely it is going to encounter some unfortunate contamination. Last year, when 600 people came down with Hepatitis A after eating at a Chi-Chi's fast-food joint in Pennsylvania, the outbreak was linked to green onions that had come from a few large farms in Mexico.

It's not clear if the contamination originated at the restaurant from a sick kitchen worker or on the farms from tainted water or at some point in between. But what is clear is that foodborne illnesses have risen sharply in the United States because people are eating more fresh produce and wanting it year-round, leading to an increase in imports from countries with less stringent sanitary standards.

So, we've got a highly vulnerable sector that is relatively easy to exploit. And there's no shortage of possible weapons (see table page 29). Here is a listing of potential agro-terrorism agents with the corresponding crop targets that came out of a United Nations scoping exercise on the subject.

"THE FARTHER FOOD TRAVELS AND THE MORE TIMES IT CHANGES HANDS, THE MORE LIKELY IT IS GOING TO ENCOUNTER SOME UNFORTUNATE CONTAMINATION."

The World Organization for Animal Health (OIE), which monitors animal diseases, has identified 15 diseases that could do rapid economic damage, all of which are readily available at any farm where there are infected animals, and all of which can be handled without any risk to the person handling them so they don't require any special equipment or know-how. Most are not even on the radar screen of American vets, let alone ranchers. And most have the possibility of jumping over from animals to humans, like the last one on the list that we're hearing so much about.

But here's the good news. Any efforts to reduce these vulnerabilities will yield substantial benefits, even if we never get hit. That is, they will make the food system stronger, healthier, and more robust.

The normal operation of most livestock farms and meatpacking plants in this country is risky and unhygienic and dangerous, even without considering the potential for malicious attack. Remember the massive meat recalls of a couple of summers ago? Those were accidents. And big meat recalls happen every week in the country, so the lethal agent doesn't even have to be smuggled into the country. It could be taken from a lab at a standard processing plant.

Let me suggest several possible solutions:

1. Encourage more diversity in the food chain—not just breeds of animals or varieties of crops, but also diversity in terms of the means of production. For example, even if several farms are raising the identical breed of hog in hoop houses, that still represents more diversity than all those animals being raised in confinement operations.

2. Encourage self-sufficient farms that aren't as dependent on inputs coming in from far away. For instance, compared to factory-farmed dairy cows, rotational grazing of dairy cows will not only be less dependent on shipments that could move disease around, but will also mean healthier and more disease-resistant animals.

3. Finally, encourage more self-sufficient communities. Because when communities depend more on their own homegrown fare, it helps keep the nation's food supply spread out and diverse and less vulnerable to any sort of perturbation, whether it's a spike in gasoline prices or a disruption to the transportation system or some massive crop failure. It assures that all the lettuce is not raised in California and that all the chickens are not raised in Arkansas.

This raises an interesting question: At a time when Republicans, Democrats, and people of all political persuasions can agree that it's dangerous to depend on foreign oil, why haven't we come to the same conclusion about something we put in our mouths?

I was recently speaking with a food marketing consultant who advises British supermarket chains on emerging food trends, and she told me that in the wake of Foot and Mouth Disease, Mad Cow Disease, the uproar over genetically modified foods, and other food scares, British consumers are flocking to farmers' markets and signing up to have weekly deliveries of food brought direct from the farm to their doors. People are doing this, she told me, because traceability has become paramount. Consumers want the reassurance and peace of mind of being able to talk to the farmer to find out exactly where their food came from, how it was grown, how it was slaughtered, and what chemicals were used in its production. This additional information and control over the food we eat really depends on shortening the chain between the farmer and the eater. The food consultant told me that British supermarkets were scrambling to get back these customers, to have local food days in their stores, to feature talks with local farmers, and to hold mock farmers' markets in their parking lots.

For the last few years, I've been tracking this same interest among Americans, and it's exploding whether you measure it in terms of the number of farmers' markets in the country or the number of supermarkets stocking locally raised fare or the number of families that will prepare holiday meals with turkeys, potatoes, and Brussels sprouts raised nearby. Large food service providers, like Sysco and Bon Appetit, are offering clients regionally sourced meals. There isn't a major school district in the country that isn't considering a "Farm to School Program."

This is, I think, the most significant change in the way Americans eat today. Here is finally an opportunity to get Americans to be curious about their food—not just how many calories or carbs it contains, but to shed a light on all of the problematic aspects of how it is now raised.

I was recently in Nebraska, visiting a new grocery store opened in downtown Lincoln. This store, which is owned and managed by farmers, stocks only products grown and processed in Nebraska, and the farmers have found suppliers of most common grocery items, from honey to canned beans to cottage cheese to bacon. The manager of this store told me that his effort isn't just about finding a market for their products. It's also about homeland security since if there were some disruption to the nation's transportation system or a spike in oil prices or some farm disease outbreak, his little corner of the country would be OK, they could do for themselves.

I have recently published a book on this movement, called "Eat Here: Reclaiming Homegrown Pleasures in a Global Supermarket," and I would like to offer this movement as part of the solution. Smaller, localized operations are not going to be immune to food safety problems or biological attack, but they do assure that the outbreak will remain more isolated and will not spread over large areas. As I said before, it's interesting to note that in Britain, an earlier outbreak of Foot and Mouth Disease in 1967 did not spread as fast or as wide because most of the slaughtering and packing of meat was handled locally.

These changes to the agricultural status quo may not seem as realistic or politically palatable, but they are the only changes that will bring us lasting security.

Crops	Region(s)	Pathogen	Comment
		BASIC FOOD CROPS	
Bean Soybean Groundnut Sunflower Vegetables	World	*Sclerotinia sclerotiorum*	High weaponisation potential. Fungus causes rot or mould on many species except cereals and woody plants. Highly destructive as airborne and seed-borne disease.
Potato Tomato	World	*Phytophora infestans*	Low weaponisation potential; late blight, wind- and rain-borne, is extremely destructive.
Potato Tomato Tobacco Banana	World except South America	*Pseudomonus solanacearum*	High weaponisation potential; bacterial wilt/slime is highly destructive; transmitted by infected material and other means; no effective defense.
Maize Sugar cane Grasses	Africa, Asia, Australia, South & Central America	*Xanthomonus albilineans*	Medium weaponisation potential. Bacterium causes devastating leaf scale.
Sugar cane	Island Asia, South Pacific, Madagascar	*Sugar cane Fiji Virus*	Medium weaponisation potential. Virus spread by infected plants but is highly destructive.
Sugar cane	China, India	*Pucinia erianthi*	Low weaponisation potential. Leaf rust is wind-borne but requires narrow temperature range, resistant varieties are available.
Cereals (incl. 40 genera of grasses)	World except Australia, Southern Africa	*Puccinia striformis*	Medium weaponisation potential. Yellow, stripe, glume rust is very destructive and can be transported over long distances by wind.
Wheat	World	*Tilletia tritici*	Medium weaponisation potential. Fungus causes common burnt or stinking or cover smut with serious yield loss.
Wheat Triticale	India, Pakistan, Iraq, Afghanistan, Mexico, Brazil	*Tiletia indica*	Low weaponisation potential. Karnal burnt is moderately destructive and spread by infected soil and plants.
Wheat Barley	World	*Puccinia graminis*	Medium weaponisation potential; stem or black rust is highly destructive but resistant varieties are available. Wind-borne.
Rice	World	*Pyricularia oryzae*	Medium weaponisation potential; blast disease is highly destructive and spread by wind. Resistant varieties available.
Rice	All rice-growing regions	*Cochliobolus miyabeanu*	Low weaponisation potential; brown spot fungus controlled by resistant varieties, fungicides.

Source: Ad Hoc Group of the States Parties to the Convention on the Prohibition of the Development, Production, Stock-piling of Bacteriological (Biological) and Toxin Weapons and on their Destruction. "Plant Pathogens Important for the BWC," Working Paper by South Africa, Document BWC/AD HOC GROUP/WP 124, Sixth Session, Geneva, 3-31, March 1997.

BRIAN HALWEIL

Brian Halweil, a Senior Researcher, joined Worldwatch in 1997 as the John Gardner Public Service Fellow from Stanford University. At the Institute, Brian writes on the social and ecological impacts of how we grow food, focusing recently on organic farming, biotechnology, hunger, and rural communities. Most recently, he describes the evolving local food movement in *Eat Here: Reclaiming Homegrown Pleasures in a Global Supermarket*.

Brian's work has been featured in the international press, and he recently testified before the U.S. Senate Committee on Foreign Relations on the role of biotechnology in combating poverty and hunger in the developing world. Brian has traveled extensively in Mexico, Central America and the Caribbean, and East Africa, learning indigenous farming techniques and promoting sustainable food production. Before coming to Worldwatch, Brian worked with California farmers interested in reducing their pesticide use and set up a 2-acre student-run organic farm on the Stanford campus. He writes from Sag Harbor, NY, where he and his wife tend a home garden and orchard.

Replace the Weak Links in the Food Chain

Peter Chalk, Ph.D.

Agriculture and the general food industry are absolutely critical to the social, economic, and political stability of the United States. Unfortunately, the sector remains highly vulnerable both to deliberate and accidental disruption for several reasons. Critical considerations in this regard include:

- The heightened susceptibility to disease of farm animals as a result of steroid programs and other husbandry practices designed to increase the volume of meat production and meet the specific requirements of vendors. These practices have raised the stress levels of livestock and inadvertently lowered their natural resistance to viral and bacterial infections.
- The existence of at least 22 microbial agents that are lethal and highly contagious to animals. The bulk of these diseases are both environmentally hardy—being able to exist for long periods of time in organic matter—and reasonably easy to acquire or produce. Moreover, livestock are not routinely vaccinated against many of these pathogens.
- The ease and rapidity with which infectious animal diseases can spread, owing to the extremely intensive and highly concentrated nature of U.S. farming. Models developed by the U.S. Department of Agriculture (USDA) suggest that Foot and Mouth Disease, for example, could spread to as many as 25 states in as little as 5 days through the regulated movement of animals from farm to market.
- The proliferation of food processing facilities that lack sufficient security and safety preparedness. Several thousand facilities exist nationwide, most of which are characterized by lax internal quality control, minimal biosecurity and surveillance, inadequate product recall procedures, and highly transient, unscreened workforces. These facilities represent ideal sites for the deliberate introduction of bacteria and toxins such as salmonella, *E. coli*, and botulism.
- The impact of a major agricultural or food-related disaster in the United States would be enormous. Overall ramifications could easily extend beyond the agricultural community to affect other segments of society. Such a disaster could lead to mass economic destabilization, loss of confidence in government, and widespread panic.

More by luck than design, the United States has not experienced a major agricultural or food-related disaster in recent memory. There has been, as a result, no real appreciation for either the threat or the potential consequences. The federal government has yet to allocate the resources necessary to develop an integrated and comprehensive emergency preparedness plan capable of responding to this kind of disaster. Meanwhile, biosecurity

and surveillance at many of the country's food processing and rendering plants remain woefully inadequate, with most lacking viable product recall and trace-back plans.

If a terrorist were to succeed in disrupting the national food supply, the United States would quickly discern the many ways in which it is unprepared to respond. Specific weaknesses include:

- insufficient resources to mitigate and contain large-scale disease outbreaks
- insufficient numbers of personnel trained to recognize and treat foreign animal diseases
- a shrinking pool of diagnosticians in general as a result of insufficient educational support for veterinary science
- insufficient food surveillance and inspections at processing and packing plants
- inadequate procedures for responding to food-borne diseases
- an emergency management program designed to deal with only one or two localized animal disease outbreaks at a time
- inadequate coordination between the agricultural and criminal justice communities
- an emergency response program that relies on an unreliable passive disease reporting systems and is hampered by a lack of communication and trust between regulators and producers.

The United States should follow at least six policy recommendations to augment the effectiveness of the country's agricultural and food emergency response structure over the short and medium term:

1. Increase investments in the following critical areas: diagnostician training in foreign animal diseases; diagnostic facilities to conduct research on virulent foreign and exotic animal diseases; regular preparedness and response exercises; and electronic communication systems to integrate emergency management staff with field staff.
2. Reform the overall veterinary science curriculum, with a greater emphasis on large-scale animal husbandry and foreign animal disease recognition and treatment.
3. Involve accredited local and state veterinarians in the USDA's overall emergency management and response plan.
4. Foster better coordination and more standardized links among the agricultural, criminal justice, and intelligence communities, especially in the context of epidemiological investigations to establish whether a disease outbreak is deliberately orchestrated or the result of a naturally occurring phenomenon.
5. Develop a viable national agricultural insurance scheme to compensate farmers in the event of a major agricultural disaster. (An insurance scheme would also improve the effectiveness of the voluntary disease reporting system upon which the USDA relies.)
6. Institute more effective biosecurity, surveillance, and emergency response measures at food processors and packing plants, especially those that exist at the smaller end of the scale. Useful measures that could be initiated immediately include better site security, increased background checks of seasonal employees, and newly formulated, clearly documented, and well-rehearsed product recall plans.

Over the longer term, a single federal agency should be given the budgetary and programmatic authority to standardize and rationalize food and agricultural safety procedures across a wide spectrum of jurisdictions. Such an agency would help to streamline the patchwork of largely uncoordinated food safety initiatives that currently exist in the United States. It would also contribute substantially to the development of a national emergency response plan that both reduces conflicts and eliminates unnecessary duplication of effort in the fight against animal and food diseases.

Related Reading

Terrorism, Infrastructure Protection, and the U.S. Food and Agricultural Sector, Peter Chalk, RAND/CT-184, 2001, 11 pp., $5.00.

California's Vulnerability to Terrorism, K. Jack Riley et al., RAND/MR-1430-OES, 2002, 188 pp.

Hitting America's Soft Underbelly: The Potential Threat of Deliberate Biological Attacks Against the U.S. Agricultural and Food Industry, Peter Chalk, (available online at www.rand.org).

PETER CHALK

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The Food System: A Potential Future

Michael W. Hamm, Ph.D.

Introduction

As we think about the future of our food system and rethink food security, it is useful to consider the situation as it currently exists, threads of possibility, and a vision for what could be. Those before me have touched heavily on the problems that confront us at this point in time. Not to add to that picture greatly but to touch on a couple of often overlooked facets of current issues is instructive. Within the framework of food systems we tend not to talk about and not to think a great deal about water. I live in Michigan, the only state in the U.S. that is entirely within the Great Lakes Watershed. Michiganders think a lot about water because we enjoy it and many who live in water scarce areas want it. Globally, water is a major issue. Right now there are 48 countries that are either water scarce or water stressed;[1] by 2050 another six countries are projected to be water scarce. If we compared food production with water stress/scarcity regions we would find significant amounts of food production in these areas—often for both indigenous consumption and for export. In addition, some water stressed areas of the United States produce large amounts of food crops that are shipped all over the country. Water stress in the western United States is somewhat congruent with areas of high fruit and vegetable production diversity (figure 1[2]). Further complicating the future productive capacity of highly productive lands are population growth and spread. Simultaneously one of the most beautiful and frightening pictures is a nighttime satellite photo of North America (figure 2[3]). Highly productive areas are overlaid with large population centers. It has been estimated that 86% of our fruit and vegetable production, 63% of dairy production, 39% of meat production, and 35% of grain production occur in urban-influenced areas.[4]

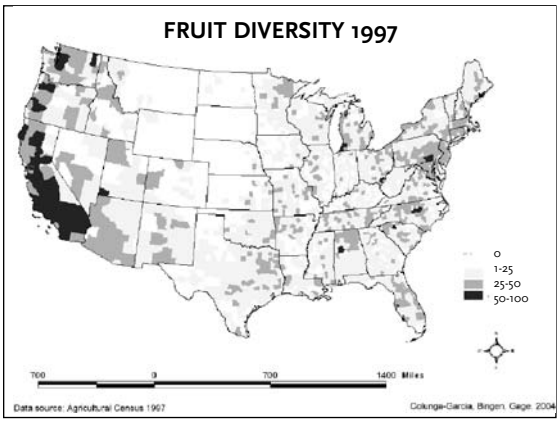

FIGURE 1

FIGURE 2

We can think of this as both an opportunity and a threat. On the one hand, places with high food production diversity are under heavy threat of development. However, there is

[1] *United Nations Environment Programme http://www.unep.org/vitalwater/19.htm*
[2] *Colunga-Garcia, Bingen, Gage (2004) personal communication*
[3] *International Dark Sky Association http://www.darksky.org/images/satelite/usa_lights_small.gif*
[4] *American Farmland Trust http://www.farmland.org/farmingontheedge/about_food.htm*

also significant opportunity to rediversify our agricultural production in these and other areas of the U.S. For example, researchers at Iowa State University have outlined the historical range of production in areas of Iowa and identified broad potential for enhanced diversity in production with linkages to more local and regional markets.[5] Many areas that used to be fruit and vegetable production regions for local economies have largely lost their agricultural diversity but maintain the climate/soil opportunity to rediversify production. In other words, the future of our food system is intimately connected to development and land use decisions in communities across the country. These decisions tend to be very local decisions at the township, municipality, or county level. There are thus a tremendous number of decision-making bodies across the country determining the lay of our landscape over the next 25-30 years and on into the future.

This is very clearly connected to our current loss of "farms in the middle." The North Central Region of the U.S. lost 8.5% of farms from 180-499 acres and 10.8% between 500-999 acres.[6] Michigan is projected[7] to lose 71% of farms between 50-500 acres over the next 25 years. That's about 17,000 farms in Michigan rural communities, 17,000 small business owners, 17,000 families that participate in volunteer organizations such as the PTO and school board, and 17,000 families that are taking care of a landscape while drawing less in municipal services than they pay in property taxes. This creates, in my mind, a sense of urgency for thinking about the relationship of rural landscapes to rural communities as well as to urban communities. There is a profound relationship between our rural and urban areas that's important to consider.

From another perspective, on average we consume a very sub-optimal diet. In Michigan, we eat about 12 billion pounds of food a year from the major components of the food guide pyramid. If we actually ate the way we're supposed to eat—decreased less nutritious items and increased such things as fruits and vegetables—we'd need 13-14 billion pounds of food. Thus, our dietary consumption patterns have the ability to drive an increased diversity in our agricultural production. It has been estimated that nationally we need another 5 or 6 million acres of production to produce the kind of diet we should eat.[8] We are presently incapable of providing a healthy diet for everyone in this country with current domestic production.

Framing Sustainability in the Food System

Thus, a starting point for considering a sustainable food system vision is focusing on relationships among activities in communities. If we frame the concept of healthy, livable communities around three access points: (health, environment, and economics) then we can imagine health outcomes from the standpoint of people maintaining a quality standard of life as they mature and age rather than focusing on how we treat diseases. We can imagine environmental outcomes that enhance our natural resource base for future generations, not degradation and restoration. We can imagine economic outcomes that create vibrant urban and rural communities aided through networks of small business owners.

How would we incorporate the idea of sustainability into this framing of healthy, livable communities? First is the recognition that we can't define sustainability as an endpoint. As we move towards greater sustainability across the facets of social, ecological, and economic

[5] *R. Pirog & Z. Paskiet (2004).* A Geography of Taste: Iowa's Potential for Developing Place-based and Traditional Foods. *http://www.leopold.iastate.edu/pubs/staff/files/taste.pdf*
[6] *M.W. Hamm calculated from USDA, 2002 Census of Agriculture*
[7] *Public Sector Associates (2001), Michigan Land Resources Project*
[8] *C. E. Young & L.S. Kantor (1999).* Moving Toward the Food Guide Pyramid: Implications for U.S. Agriculture. *Agricultural Economic Report No. 779.*

dimensions, we will identify other shortfalls to our practices. In other words, 10 years from now we will hopefully have a very different concept of sustainability than we do today and 20 years from now it will further evolve. Sustainability is a process of improvement. A recent focus group we conducted with farmers and others in the food system brought this home to me. In response to a question concerning their role in preserving the environment one farmer said (paraphrasing), "Well, I think that I do a better job than my dad did 20 years ago. I use fewer pesticides, partly because it's more expensive now, and it costs me money to do it, but I do a better job and hopefully my kids will farm and they'll do a better job than I do."

With this in mind, when I think of a sustainable food system, I think of more rather than less, as in shorter food commutes on average rather than longer. This doesn't mean we're going to get everything from a local place and it doesn't mean we're going to get everything from a global place, but it means we shorten the food commute. It means that we have more understanding of our roles and responsibilities rather than less. It means that there is greater environmental sustainability rather than less, that there are more relationships built between people focused around food rather than less, and that there's more rather than less control by individuals.

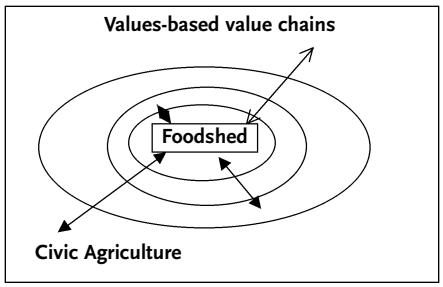

FIGURE 3

How do we put this in a food system context and maintain a perspective regarding the volume of food required to feed 10 million people—about 12 billion pounds? There are three schools of thought in the literature that I believe can be integrated to help conceptualize a vibrant, sustainable network of community-based food systems (figure 3). Kloppenburg[9] et al have developed the "foodshed" concept. While there are a number of facets to the concept I will only utilize the spatial aspect for this discussion. Similar to the drainage area of a watershed, a foodshed is the area from which people could or do get their food. In its simplest terms, it's a spatial relationship to our food system. Lyson[10] has introduced the concept of "civic agriculture" with expansion of the concept by DeLind.[11] Again, simplifying for the sake of brevity, it is a concept that focuses on direct market relationships between producers and consumers and about building food-focused relationships between people. Finally, there is a newly emerging concept of values-based value chains.[12] The conceptual intention is to maintain transparency in the supply chain in which values desired by consumers begin with the producer and are identity-preserved as they move through the food chain to the consumer. In addition, the concept implies a greater degree of price-making (for example, cost plus pricing) by producers. It is intended as a way to build relationships between producers, consumers, and all the intermediaries involved in moving food from field to fork over the course of a year. Linking these concepts implies a dynamic relationship between self-provisioning (i.e., home and community gardens), direct market relationships (i.e., farmers' markets, farm stands, and CSAs), and indirect market relationships (i.e., retail markets, institutional food meals, restaurants) in a manner that maintains a consistent set of values throughout. These indirect market relationships can be either at the local, regional, national, or global level. It can kind of be at any scale, but it is a matter of looking at relationships between people.

As we develop a framework for understanding spatial relationships to our food system—the foodsheds from which we draw food, the relationships that are developed with direct market

[9] *J. Kloppenburg, J. Hendrickson, & G. W. Stevenson (1996)*. Coming into the Foodshed. *Agriculture and Human Values, Vol. 13, pp. 33-42.*
[10] *T. Lyson (2000)*. Moving Towards Civic Agriculture. *Choices, pp. 42-45.*
[11] *L. DeLind (2002)*. Place, Work and Civic Agriculture: Common Fields for Cultivation. *Agriculture and Human Values, Vol. 19, pp. 217-224.*
[12] *See for example the Leopold Center at Iowa State University* http://www.valuechains.org/valuechain.html

relationships through civic agriculture approaches, the relationships that are built through values-based value chains, and transparency in the supply chain between producer and consumer—distance can not be the only defining trait of importance. As we start to move things from greater distances to shorter distances and as we start to build relationships over greater distances, what kinds of relationships do we build and how do we honor one another? I am reminded of framing concepts in sustainable development, one being import substitution. When we consider import substitution and shortening food distances, we should consistently revisit the potential for "local" to be just as environmentally degrading as distant, just as animal unfriendly, and just as unfair to labor (a farmer's own labor as well as the hired help). It can have very little relationship to enhancing democratic processes. There may be nothing inherently superior about local that makes it better than getting something more distant, with the exception of shortening the food miles and saving energy. In other words, it is equally important to consider issues of equity and democracy, fair labor trade and environmental stewardship,[13] as hallmarks of both civic agriculture and values-based value chains.

None of this is intended to negate self-provisioning: people producing for themselves, their families, their friends. There is a great deal of inherent value in people producing fresh produce and more. In 1998 we consumed about 100 pounds more per year from commercial vegetable production than in 1919, but we consumed 120 pounds less per year per capita from home production.[14] Interestingly, the overall differential in consumption is not far off the increase we need to meet recommended levels of consumption. There is a marked potential to increase our consumption from community and home gardens. It may be true that self-provisioning also increases opportunities for farmers to expand their production portfolio due to an increased willingness to try on the part of consumers. Also, several studies demonstrate widespread interest in supporting sustainable and family farmers. The Hartman Group reported that about 52% of U.S. shoppers want to support sustainable farmers[15] while a study from North Carolina State indicated that 71% of respondents wanted to see policies supporting family-owned, environmentally friendly farmers.[16] It is, however, useful to remember that personal attitudes and behavior in the marketplace are not necessarily congruent. Another study gives credence to the relationship between direct and indirect marketing.[17] In this study of consumers' interest in purchasing local foods, 80% say they'd like to purchase at the grocery store, 75% at farmers' markets, 71% from local farmers at the farm, and 55% at restaurants or cafeterias. In other words, there is an array of data demonstrating broad interest in a range of outlet points for food. Where do we start?

Criteria for food sourcing

—If we can source local we should
—If we can't, can we substitute?

If from outside are the same values transparent?

FIGURE 4

A Sampling of Approaches to Change

A number of approaches are being developed, implemented, and modified across the country to evolve a sustainable food system. One significant place to start is with today's youth. Thus, for example, California has a statewide policy to develop a garden in every school.

[13] *A.C. Bellows & M.W. Hamm (2001).* Local Autonomy and Sustainable Development: Testing Import Substitution in Local Food Systems. *Agriculture and Human Values, Vol. 18, pp. 271-284.*
[14] *USDA, Major Trends in U.S. Food Supply, 1909-99 (Food Review, Volume 23, Issue 1).*
[15] *Taken from a talk by Jennifer Wilkins, Cornell University*
[16] *R. C. Wimberley, et al.* Food from Our Changing World: The Globalization of Food and How Americans Feel About It *(accessed at http://sasw.chass.ncsu.edu/global-food/foodglobal.html).*
[17] Attracting Consumers With Locally Grown Products. *Food Processing Center, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln (2001).*

Community non-profits, 4-H educators, teachers, and others across the country are building living, learning spaces focused on plants. Many professionals conduct nutrition education in schools to encourage better eating habits. This provides a wonderful opportunity but also, to me, a challenge. Nutritionists in this country are typically trained to think that all food is equal—that one apple is no different from another and that all food has a place in a healthy diet. But food has attributes that go beyond the chemical and nutritional content. In fact, these attributes may help modify the chemical composition. Food has differences.

We recently completed a survey of 664 Michigan school food service directors (FSDs) in which we asked them a number of questions concerning their practices as well as interest in sourcing Michigan agricultural products for their school lunch programs. When asked their level of agreement with the statement, "I would purchase food directly from a local producer if price and quality were competitive and a source were available," 73% of the respondents either agreed or strongly agreed. When asked their level of agreement with the same statement, only with the products coming through distributors, the percentage agreeing or strongly agreeing significantly increased to 85%. That represents 275 school FSDs who've said they'd like to source Michigan products through their distributors. Now the trick is making it happen. These schools use, on average, three to five distributors with a couple having a large market share and a number of smaller ones. The FSDs identified barriers that need resolution but also reasons for interest that can be utilized. Interestingly, with no formal "Farm to School Program" in place across the state at the time of the survey, 40 FSDs indicated that they had sourced from local farmers in the last year. We have begun to identify some of those people and learn their stories. On the western side of Michigan there is one FSD in an apple growing region who goes to a local farm every week and gets two bushels of apples. There is another one who lives in a blueberry producing area. After getting blueberries from one of the local blueberry farmers, she received a standing ovation at the school board meeting for her actions: it turns out one of the school board members is a blueberry farmer. We're also finding that a number of the school FSDs grew up on farms and have a passionate interest in farm to school connections—an immediate connection that can be tapped.

"FOOD HAS DIFFERENCES."

If we then consider the household purchasing power of 105 million U.S. households, the potential for change is staggering. These households spend on average $5,375 per year on food. That's about $325 billion of food spending annually for at-home consumption and about $239 billion away-from-home spending.[18] This, coupled with the number of people indicating a desire to purchase food with attributes consistent with ideas outlined in this paper, creates a tremendous potential for consumer and market driven change in our food system. Another way to think about it is to consider the "six degrees of separation" concept. Several national meetings on topics related to the theme of community-based food systems annually have upwards of 500 attendees. If those 500 each organized six families to buy direct local and indirect value-chain products with other environmentally and socially sound incorporated attributes, and those six got six and so on through six degrees of separation, the final tally of impacted families would be 24 million. In other words, it doesn't take heroic steps by individuals but rather small steps by large numbers of people to make significant change happen. It takes those that Gladwell refers to as the early and late majority to engage in the change.[19] It may be useful to consider manageable actions: these 24 million families averaging $10 per week of local produce for 20 weeks per year equals $4.8 billion dollars of

18 U.S. Dept. of Labor, Bureau of Labor Statistics (2002)
19 M. Gladwell. Tipping Point.

sales; purchasing one gallon per week of pasture-based milk at $3.50 per gallon equals $4.4 billion dollars of sales; purchasing 2 dozen eggs per month from farms managed across environmental and animal welfare criteria at $2.50 per dozen equals $1.44 billion dollars; purchasing an additional $1,500 per year via values-based value chains equals $36 billion dollars. This totals $46.64 billion dollars or about 15% of the total at-home food spending. Clearly, relatively small changes by many households yield a large effect.

Comparable changes could happen on the away-from-home side. In fact, some argue that this might be an easier side of the potential to tap. What we can't possibly know at this point is: When do we reach the tipping point? When do these types of purchasing patterns become a social epidemic? With the examples above, 20-25% of the population is directing 15-20% of food sales through these various routes: self-provisioning, direct market relationships, and values-based value chain relationships. At what point do we reach a situation in which doubling is assured? I don't have an answer to that. What I do have an answer for, however, is the power of linking public health messages with a food systems approach to enhanced sustainability. Examining fruits, vegetables, and dairy can be informative.

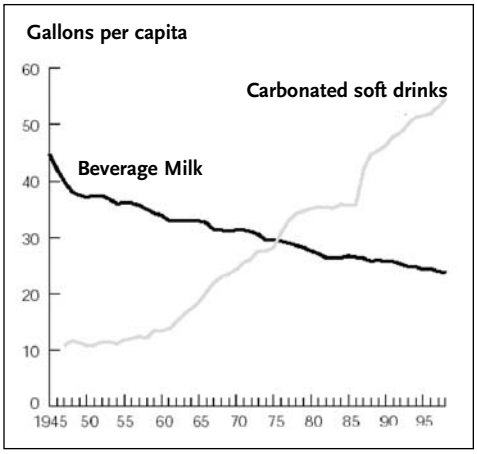

FIGURE 5

As we all know, very few people in the U.S. consume a diet consistent with the dietary guidelines promoted by nutritionists and public health professionals. But what would happen to production and distribution opportunities if we did? Using Michigan as a case study, what if consumers in Michigan did eat five servings a day of fruits and vegetables? Based on current average consumption, it would mean about 100 pounds more per adult or about 78,000 more acres of production by Michigan and Northeastern yield standards. That's a lot of produce. Setting aside issues of lactose intolerance and dietary restrictions (whether medical or philosophical), what if consumers drank the entire recommended daily allowance of dairy? We do have a good idea that people are getting insufficient calcium and that there is an increasing risk of osteoporosis with insufficient bone stores of calcium (along with inadequate weight bearing exercise) as people age. In Michigan, the current intake deficit is equivalent to about 5.2 billion pounds of food. There is about a two-fold variation in annual milk production depending on dairy production strategies: at 25,000 pounds per cow we would need 200,000 additional cows while at 13,000 pounds per cow, about typical for a seasonal, heavily grass-based dairy cow, that's about 345,000 cows. Disperse 200-400,000 cows across the countryside at a couple acres per cow and you have a large amount of landscape that can be sustainably managed to enhance ecosystem services and provide livings for families across the state. Reversing the curves seen in figure 5 can be developed in such a way to both help reduce future health care costs and improve the sustainability of our food system.

In all of this I firmly believe that the Land Grant Universities and higher education in general have a profound role to play. For me, a fundamental role of the land grant system is to help provide a context for decision-making about alternatives and options as people, families, communities, and governments develop and evolve. The land grant role is not to predetermine a narrow range of options e.g., only pursuing research, teaching, and outreach in those narrow areas. It is to recognize that we are here to conduct research, teaching, and outreach

that expands, illuminates, and provides a context for decision-making; decisions mean alternatives to weigh and consider.

It is within this context that I choose to do my work and consider what a vibrant food system might look like. In brief, I'd like to live in a food system in which I know where a significant percentage of my food comes from, not necessarily all of it. I don't have enough hours in a day to track everything that I eat but I'd like to know where a lot of it comes from. I'd like to know that the production, processing, distribution, and waste were done in an environmentally sensitive manner. I'd like to know that the democratic principles upon which this nation was founded are made stronger and not weakened through consolidation and monopolization. I'd like to know that the farmers who grow our food are honored as heroes and not marginalized as commodity producers. I would like to know that every person and consumer working in the food system has the opportunity to reach their potential and is not limited by less than living-wage jobs, poor nutrition, and substandard education. I would like a food system in which food is a right and working honestly is a responsibility. It appears that we have reached a moment in time that is, literally, ripe with opportunity. We can embrace this opportunity, link with a large percentage of U.S. residents, and evolve an ever more sustainable food system.

MICHAEL HAMM

Dr. Michael Hamm is the C.S. Mott Professor of Sustainable Agriculture at Michigan State University and head of the C.S. Mott Group for Sustainable Food Systems at MSU. His appointment encompasses teaching, the Experiment Station, and Cooperative Extension. The work of the C.S. Mott Group for Sustainable Food Systems at MSU is focused on small and medium-scale family farm viability, equal access by all members of a community to a healthy diet, and dispersing animals in the countryside. Prior to moving to MSU he was Dean of Academic and Student Programs for Cook College, Rutgers University. At Rutgers he co-founded and directed the New Jersey Urban Ecology Program, an effort that brings together individuals from diverse backgrounds to address sustainable food systems in New Jersey. Michael has also been facilitator for the New Jersey Cooperative Gleaning Network and the founding director of the Cook Student Organic Farm from 1993 to 1998. He was board member and board president of the Northeast Organic Farming Association of New Jersey. He does research in the areas of community food security and community and sustainable food systems.

Emerging Corporate Strategies for Working with Small-scale Producers and Making Their Products Available Regionally

Craig Watson

The focus of this presentation provided thought and discussion on the *"emerging corporate strategies for working with small-scale producers and making their products available regionally."* There are many issues to identify and resolve along this complex supply chain. It is important to understand specific guiding principles that must be currently understood to improve our chances of supply chain success. The *"emerging corporate strategies"* must be in proper alignment with the company's vision, mission, and core values. These *"emerging corporate strategies"* must be a parallel subset of a larger, more diverse global initiative which is tied to social responsibility activities. Our recent corporate initiative to nurture and support the development of agricultural sustainability will provide the schedule to explore, identify, and execute the specific *"emerging corporate strategies,"* bringing locally grown products to market at a profit for all stakeholders.

There are several avenues available to us which can assist us in accomplishing this task. These include academia, public lending institutions, and local, state, and federal government regulatory agencies. Finally, an underlying principle that is absolutely necessary for success is that all activities at each step of the supply value chain be objectively analyzed and clearly understood.

Our company has established dialogue and a meaningful relationship with the Leopold Center for Sustainable Agriculture at Iowa State University. Through our company's verbal and financial support to the Leopold Center, successful federal aid and significant grants have been received from the Kellogg Foundation. The Leopold Center nurtures the development of specific niche programs. Our company carefully examines specific programs and maintains interest in market development.

Defining a corporate strategy is much more difficult for a large, decentralized corporation such as SYSCO. Our agricultural sustainability efforts need to fall in line with the image of our company and be a subset of activities related to our social responsibility initiatives. There are specific arenas which our company will explore. Our initiatives in agricultural sustainability will have a global perspective, national/regional programs, and a local initiative. Our global perspective will be both a think tank and action activities.

National/regional participation will be an exciting area where our activities will be successful. Our company is concerned about the plight of the family farm. The number of farms in the 350-1,200 acre range continues to decrease as the mean age of the individual farmer continues to increase. These farmers must specialize or many will not survive.

We believe that the "agriculture of the middle" theory holds a great opportunity to provide niche products to the marketplace. The niche products provided by this farmer group, if properly developed and marketed, will supply exciting menu alternatives. Restaurateurs prefer to represent products on their menus as hand-selected, uniquely prepared, and locally procured. This trend will continue. However, there are obstacles that we must overcome prior to successful market introduction. These include critical mass of product availability, product traceability, liability insurance of the grower/processor, and the appropriate product attributes and pack sizes for the restaurant trade.

The small farmer group should not be overlooked. It could be an important sector but does have some challenges. Products from this sector can be seasonal in nature, supplied by smaller family farms. Some of the issues impeding market entry include the lack of liability insurance and the mode to bring products to market. However, these challenges can be overcome. Our company has developed locally grown, seasonally available, "farmers' market" programs of fresh fruits and vegetables. These programs have been quite successful, and interest by our customers continues to grow.

Technology continues to drastically change our professional and personal lives. Our company is actively engaged in many technological aids to support the supply food chain. Availability, order entry, and delivery of highly specialized niche products from this small farmer segment will be a challenge. However, we have developed an internet order entry system called ChefEx to address this problem. We have completed a data test with approximately 1,000 products from nearly 100 specialty suppliers. Our goal is to ultimately link into individual restaurants directly with the supplier rather than SYSCO providing the purchasing arm. The same system could be used to connect farmers with the restaurant table.

Our current food customers assume and expect that the products they receive have been handled in a manner to ensure food security. It is our responsibility as members of the food supply chain to ensure that their confidence in food security is never questioned. The food security of our products in the foodservice business does vary widely by product category. A part of the food security agenda does relate directly to product traceability. I strongly believe that technology will play a larger role in securing our food sources in the future. I highly recommend technology development to ensure that RFID (Radio Frequency Identification) is implemented in as many food systems as possible. Additionally, the same technology could and should be used on a wide scale in the traceability of live animals that are raised for human consumption.

In short review, any corporate strategy to move products procured from small-scale producers must be properly aligned with current corporate strategies such as mission, vision, and values. We have great opportunities to move products forward, provided that we properly understand and recognize the obstacles that impede market introduction. Also, I highly respect that all stakeholders must receive a meaningful profit for their contributions and efforts. Furthermore, advances in technology must be properly utilized to bring these products to market at the lowest cost in a seamless channel of distribution between grower/processor and restaurateur to ensure an enjoyable dining experience.

CRAIG WATSON

Craig Watson is Vice President of Quality Assurance and Agricultural Sustainability for SYSCO Corporation with National Headquarters in Houston, Texas. Mr. Watson received his Bachelor of Science degree in Animal Science (1974) and his Master of Science in Meat Science (1976) from Iowa State University. In his current position, Mr. Watson leads approximately 180 full and part-time employees who are actively engaged in the supervision of 42,000 Sysco Branded products. The Sysco Quality Assurance team is responsible for product development, global supplier approval, and the development and implementation of socially responsible quality systems to ensure product consistency and food safety of approved sources of supply.

FamilyFarmed.org: Chicago and a Values-driven Food System

Jim Slama

Mayor Daley is developing a plan to make Chicago the "Greenest City in America." As part of this project, he hired internationally renowned architect and industrial designer Bill McDonough to assist with the city's efforts. In response to a suggestion that Chicago could become "the organic food capital of the Midwest," McDonough wrote in Chicago-based magazine Conscious Choice that "Supporting a regional organic food system is one of the important places to start. In this new model, Chicago's markets could support the rebirth of the American prairie. Organic farming works with natural cycles of water and natural flows of nutrients. It heals the soil and the watershed, a dire need in a region in which conventional farming has exhausted the earth. As Chicago's markets for organic food grow, the city would become an ever-stronger catalyst for the restoration of economic, social and environmental health in the rural Midwest—not to mention the health of Chicago's citizens."

The historical and economic rationales for such a goal are sound. Chicago's central location helped make it an industrial powerhouse in the early 1900s, and much of that economic activity was based on food production. Yet in the past few decades, the "hog butcher of the world" has seen most of the area's food processors abandon their operations. Simultaneously, the Midwest's farm economy has been devastated. The globalization of agriculture has transformed the formerly diverse Midwestern agriculture sector into a commodity system growing mostly corn and soybeans. The transition has driven many farmers out of business and devastated hundreds of rural and urban communities.

A growing segment of Americans is concerned about the quality and safety of their food. Providing these people with food that matches their values could become the foundation of a revitalized regional food system. Industry experts believe that 25 to 50 percent of the organic food consumed in the Midwest could be grown and processed locally. By doing so, hundreds of millions of dollars could be retained each year by local growers and processors. This, in turn, would stimulate a growing demand for supplies and services to support food production and processing and create new jobs in multiple sectors of the regional economy. "Local organic production will be a boon to the Illinois economy, both in Chicago and downstate," said Chicago venture capitalist David Wilhelm, who was the manager for Richard M. Daley's first mayoral campaign as well as Bill Clinton's 1992 national presidential campaign. "Policymakers should pay attention to the potential for local economic development and job creation in this area. The impact it will have on the farming, processing, and agricultural services sectors may create a tremendous economic multiplier effect benefiting the entire region."

Chicago and the Midwest as a Hub

Bill McDonough's vision of Chicago as the hub of a regional organic food system is grounded in the reality of the marketplace. In March 2004, the Chicago Tribune reported that the retail market for organic food in Chicago was likely in excess of $300 million. Yet a 2002 study by the Prairie Partners Group indicated that regional farmers produce only about three percent of the organic produce bought by Chicago area stores and restaurants.

The market for organic food in the states surrounding Chicago is even more significant.

State	Population	Organic food sales @ 50% U.S. per capita (in millions)	Organic food sales @ 100% U.S. per capita (in millions)
Illinois	12,419,293	$275.1	$550.2
Indiana	6,080,485	$134.7	$269.4
Iowa	2,926,324	$64.8	$129.6
Kansas	2,688,418	$59.5	$119.1
Michigan	9,938,444	$220.1	$440.3
Minnesota	4,919,479	$108.9	$217.9
Missouri	5,595,211	$123.9	$247.9
Nebraska	1,711,263	$37.9	$75.8
North Dakota	642,200	$14.2	$28.4
Ohio	11,353,140	$251.5	$502.9
South Dakota	754,844	$16.7	$33.4
Wisconsin	5,363,675	$118.8	$237.6
TOTALS	64,392,776*	$1.43 billion	$2.85 billion

**Basis: U.S. population: 293,458,576*
Organic Market Size: $13 billion (Washington Post)

Values-driven Food

Tens of millions of Americans are committed to locally grown organic food. This food matches their personal values and includes the following attributes:

- Free of pesticides, synthetic hormones, and antibiotics
- Appropriate scale
- Fair trade/fair pricing
- Humane treatment of animals
- Respect for the environment
- Buying local

Farmers' markets, community supported agriculture (CSA), and other forms of direct marketing are rapidly expanding to meet the demand for this food. One reason for this growth is that consumers appreciate the opportunity to relate directly with farmers, which provides them both a stronger connection to their food and reliable information about its quality.

A 2003 report by the Hartman Group states that 10 percent of Americans are "core organic consumers" or those who are passionate about organic and identify it as a major component of their lifestyle. The report describes these people as "...looking for all products that are organic, unprocessed and produced by a local or independent source." This segment was first publicly identified in 2001 when Michael Pollan reported in the *New York Times Magazine* that General Mills considered about 10 percent of Americans to be "True Naturals," identified as "committed, activist consumer(s)" of organic food.

Values-driven consumers were chronicled in the July 20, 2003 New York Times article, "They Care About the World (and They Shop, Too)." In it, the author reported that 50 to 68 million Americans "...preferred to make purchases from companies that shared their values, and many said they were willing to pay a premium for products and services they considered sustainable, which means that they are made in a way that minimizes harm to the environment and society." This growing segment of Americans is inherently supportive of the principles, as listed above, that are integral to traditional organic food production.

The strong convictions and committed purchasing patterns of values-driven consumers make them an ideal target market for a new approach to food production and marketing based on a defined set of attributes. This system will provide a market-driven mechanism that gives consumers ample information to purchase food matching their values. The system's transparency will encourage food providers to create socially responsible products that benefit farmers and local communities. The end result will be a sizable values-driven food economy that provides a viable alternative to industrial food.

FamilyFarmed.org: A Portal for Values-driven Consumers to Meet Producers

To support the values-driven food movement in the Midwest, Sustain's Local Organic Initiative (LOI) has helped spearhead a number of projects to assist local organic farmers develop markets with Chicago retailers and restaurants. We began by pulling together numerous regional stakeholders to examine the critical needs of producers and identified a strong desire for marketing and distribution support. As a result, Sustain created the 2004 Local Organic Trade Show – Chicago. Exhibitors at the event represented over 500 regional organic producers. Over 100 purchasers from Chicagoland restaurants and twenty-five buyers from supermarkets such as Whole Foods Market and Dominick's attended. Farmers have indicated that they expect the show to deliver sales increases.

The evolution of the Local Organic Initiative has led Sustain to create FamilyFarmed.org: a website, label, and Expo encouraging consumers to buy values-driven food produced by local family farmers and processors. In September 2004, Sustain partnered with the Midwestern region of Whole Foods Market, the nation's largest retailer of organic foods, to launch the project. In order to educate customers about the benefits of locally grown organic food, Whole Foods has distributed FamilyFarmed.org brochures that describe the benefits of buying local food and has hung large, colorful posters in each of their Midwest stores. In addition, FamilyFarmed.org labels on the store shelves identify regional organic products and the states in which they were produced. In 2005, Sustain will hold the FamilyFarmed.org Consumer and Trade Expo at Chicago's Navy Pier, expand distribution to other retailers and restaurants, and develop a label and certification for participating producers.

FamilyFarmed.org Components

Website: The FamilyFarmed.org website educates consumers about the benefits of buying food that matches their values, especially the advantages of supporting local farmers. Once on the site, consumers can gain access to information about producers, including a picture of the farm family or processor and a description of their products and growing methods. Eventually it will evolve into a portal with a broad level of information linking consumers with local producers, events, and advocacy.

Label: Sustain has created a label that can be used on fresh fruits and vegetables as well as on processed foods. It includes the FamilyFarmed.org logo, the place of production (for example, Illinois or Chicago), and the name of the farmer or processor who created the product. The goal is to make it easy for consumers to immediately determine the food's place of production and organic certification level. The labels are also designed to send people to the website to encourage a deeper connection with the producer.

Certification: Sustain and other stakeholders are developing a three-tier, color-coded certification system for FamilyFarmed.org based in part on the federal organic standards: 1) Transitional, 2) Organic Equivalent, and 3) Beyond Organic. In order to immediately rectify some common complaints about the U.S. Department of Agriculture's (USDA) National Organic Program, producers at all three levels will need to meet standards for appropriate scale. Stakeholders are also working with humane organizations to develop strong standards to guarantee the humane treatment of farm animals. All FamilyFarmed.org producers and processors will need to meet these strict animal welfare standards.

The Three-tier Certification System

Transitional: Farmers who are just beginning to farm sustainably will be given a three-year period to transition to the organic equivalency as part of FamilyFarmed.org. Although the USDA Organic Standards no longer allow transitional farmers to display a transitional label, FamilyFarmed.org will encourage entry level and small family farmers by allowing them to utilize the label from the time they join the system. This will give them access to markets and price premiums available in the FamilyFarmed.org system.

Organic Equivalent: If farmers are already certified organic, or if they have been in the system for three years, they will need to meet base requirements of the current organic standards. This will include producing food that is free of pesticides, synthetic hormones, and antibiotics. It will also have to meet the federal standards for environmental protection.

Beyond Organic: Over the next few years, Sustain will work with stakeholders to develop the third tier of certification reflecting the concerns of beyond organic advocates. This

standard will include definitions for fair trade and fair pricing, labor standards, and even stronger protection for the environment than current organic standards offer.

Stakeholder Involvement

In order to create a strong certification effort that reflects the needs of producers and consumers, we are exploring the opportunity to work with the national "agriculture of the middle" project and their efforts to link regional family farmer networks with a certification system and national brand. A number of organic certifiers are also interested in providing certification systems to FamilyFarmed.org. Since these certifiers are adept at verifying the requirements of the U.S. organic standards and are already working with many participating producers, they have the capacity to adapt their programs to meet the needs of an additional set of standards. In any case, family farmers will be deeply involved in the development of these standards to ensure that their interests are well represented.

Promoting Local

The system would promote the concept of local food by identifying the place of production for all products bearing the label. Such identification could encourage consumers to buy products produced as close to home as possible. For example, Wisconsin cheese would be clearly identified as being produced in the state. Vegetables grown in Chicago on an urban farm may designate "City of Chicago" as their place of production. This system will be combined with a regional marketing campaign to educate a broad level of consumers about the benefits of purchasing local food.

JIM SLAMA

Jim Slama is the president of Sustain, a not-for-profit environmental advocacy group. Sustain has contributed to numerous local, regional, and national environmental victories. Its strong images and creative campaigns have been featured in Wall Street Journal, Washington Post, The New York Times, Los Angeles Times, Chicago Tribune, People and Time magazines. Jim and Sustain worked with the Organic Trade Association to develop the Keep "Organic" Organic Campaign, which helped generated 275,000 comments to the USDA encouraging the creation of strong organic standards. Jim and Sustain recently launched FamilyFarmed.org to build markets for Midwestern organic farmers. Jim was on the transition team of Illinois Governor Rod Blagojevich and now sits on Illinois' "Governor's Agricultural Advisory Council for Farmers and Farm Families." He also chairs the marketing and distribution subcommittee of Mayor Daley's Chicago Organic Committee, which is developing a plan to support organic food production, marketing, and distribution in Chicago. Jim is the founding publisher and editor of Conscious Choice magazine. Conscious Choice has been recognized eight times by Utne magazine as a member of the Best of the Alternative Press.

Sustainable Agriculture for Secure Food Production

David Wilson

There is no doubt that food security and sustainable food production are inextricably entwined. If OUR food, and I really want to emphasis the word "our" in this sentence, is not grown in a sustainable way, at some point in the future, its production will be threatened and therefore insecure.

Sustainability

What exactly is meant by the term sustainable production? There have been many words written over the years that have attempted to explain the meaning. The one simple definition that stands out to me reads as follows: "Sustainable Agriculture is a form of food production which builds soil fertility, protects biodiversity, and provides people with wholesome healthy food for all time."

Change

We are living in a time of rapid change where food as a proportion of average income is cheaper than it has ever been. We live in a time when the consumer has little or no connection with the countryside and virtually no understanding of primary food production. I believe that because food is so cheap, it is not valued in the mind of the consumer and is therefore taken absolutely for granted. It is a little like spoiling a child. If you give the child whatever it wants, whenever it wants it, the child loses its perspective on value. The consumer of today can buy whatever he or she wants, whenever he or she wants it, at the lowest prices ever. Seasons have become irrelevant and the global marketplace rules.

At the same time, the income of farmers has fallen hugely. In the UK, most farms are losing money or barely breaking even. The number of farmers has also fallen dramatically and the age of those remaining has risen in the UK to an average of 59. The more I think about this dilemma, the more I see sets of lines on a graph. I see one set climbing sharply and the other falling steeply.

On the up line, I see profits from supermarkets and multinational companies, up with the average size of farms, up with the average age of farmers, up with suicide and depression amongst farmers, up with the number of hours worked by farmers, up with the incidence of intensive farm-related pollution, an increase in obesity, the rise of certain diseases, and a huge rise in the amount of information about everything.

On the down line, I see farm profitability, the number of people employed in agriculture, the number of students studying agriculture, consumer understanding of food production, the ability to cook, respect for farmers, and common sense.

When seen on a graph, these groups of lines cross and head off in very different directions. In an ideal world these lines should be parallel. This is not a healthy picture for mankind and will not secure our future food production.

Multinational Domination

There can be no doubt that the "Multinational" is eroding food security. The Multinational's main interest is in making money and maintaining or increasing domination. Competition between these vast and ever-growing organizations causes them to compete with an increasing ferocity. The relationship between supermarkets' and their suppliers has been called a fear chain. The suppliers dare not question the supermarkets incessant demands for lower prices. This causes constant downward pressure on margin which in turn is passed down the line until it reaches the farmer. At this most vital point in the production chain, where our food is either born or where it germinates in the soil, the margin is just quietly absorbed. It is accepted as though it is normal procedure. The family farm that still makes up the majority of our food producers worldwide is expected to stand, head bowed, and take yet another uncomplaining low punch. With the family farms of every nation lie the origins of our culture. The customs we celebrate often have their roots in the land and in the people that care for that land. The family farm has traditionally been able to tighten its belt in the lean times and survive until business picks up. It can no longer do this and farms are disappearing at an unprecedented rate. This is, under the Multinational-dominated system of our time, irreversible. It is also unsustainable. With the disappearance of these farmers goes the backbone of agriculture. Disempowerment of the farmer by the Multi-national is a major threat to food security.

"WITH THE FAMILY FARMS OF EVERY NATION LIE THE ORIGINS OF OUR CULTURE."

It is good to talk about and promote direct marketing—these are ways that can genuinely improve the profitability of a farm, but this is not for everyone. Many farmers will never have the ability or time for this; they are good at farming but they are not marketers and it is a mistake to think otherwise. The farmers that remain in business are those who have expanded their scale of operation, often continuously, for the last two or three decades. They have become highly mechanized, have reduced production costs, and cut every corner to allow themselves the slimmest of margins to survive. The reductionist experts of our time will call this efficient. They say it gives the consumer cheap food. It also fits into an operational scale the Multinational identifies with that is large and centralized. This industrial model has a huge capacity to spread disease. As Eric Schlosser reminded us in his book "Fast Food Nation," the massive modern abattoirs that process much of our food are like an airport for germs—if a dangerous bacterium gets into the system, it can be everywhere in 24 hours. It was Rudolf Steiner who said that the farm should be self-sufficient, an organism. Decentralization is the way to produce some food security as well as reducing food miles, but it does require citizens who are loyal to localness and today few are.

Externalized Costs

If we look closer at the system, we find that it is anything but efficient. It is heavily dependent on fossil fuels for fertilizer and agrochemical manufacture. The system also has the capacity to pollute land and water and inflict severe damage on ecosystems. If these costs are externalized, the food produced starts to look a lot more expensive. In the UK in 1996, this cost amounted to £2.34 billion or $4.20 billion. Not included in these figures are the costs to our health system.

Genetic Erosion

Another threat to the security of our future food is the erosion of our genetic heritage. We now depend on fewer genes than ever for our food. A very successful bull can be used throughout the world as can a super-yielding seed. But this widespread use of fewer genes leaves us in a vulnerable position. In nature, genetic diversity is a strength. It is what has enabled living organisms to survive whatever threat there has been to their existence by being genetically different to those that have succumbed. Our so-called clever and sophisticated world appears to totally ignore this fact and continues to erode our genetic heritage at an alarming rate. The reason this is happening is because the breeding and the control of our food genes are handled by ever bigger and more powerful transnational companies.

These organizations want to make as much money as possible from their latest breeding programs and normally attract a buyer to their latest product with the lure of greater yield of milk, meat, or grain. The human brain seems to find the temptation of "more" almost irresistible, and the higher the claim made by the company, the more it is able to sell and the more likely it is to beat the competition. However, it is interesting to note that the length of time a new product lasts gets less and less. This shows two things: firstly, the genetics of the new breed or strain are not as robust as they used to be, and secondly, a faster turnover of new genetics gives these controlling companies more opportunity to produce and sell to the farmer the very latest and most fashionable genetics. This has lead to a severe narrowing of genetics in breeding programs that ultimately affects our food quality and is certainly not in the interest of mankind.

Food and Health

A good example of this takes place in feedlots where beef animals are fed with an unnaturally high diet of cereals. A ruminant[1] has evolved eating and digesting large amounts of fiber not grain. On a high cereal diet, the rumen becomes acid and the animal can become ill. As a result of this, breeding tends to favor those animals that can survive and grow fastest under this unnatural system. As well as favoring the wrong genes, there are other problems with this system. An acid rumen dramatically increases levels of *E. coli* in the gut. Furthermore, ruminants are inefficient converters of grain, and the grain used to feed them is not only subsidized but also heavily dependent on oil to grow. Another interesting difference between these two systems of production relates to fat quality. The intensive beef animal contains higher levels of omega 6 fatty acids, whereas pasture-fed beef is higher in beneficial omega 3. The saturated fat content of the lean meat is also higher in the intensively reared beef carcass. The same applies to other intensively reared meats like chicken and fish. Interestingly, we used to consume omega 6 and omega 3 fatty acids at a ratio of 1:1. It is now between 10 and 20:1. The correct ratio of these omega fatty acids is known to be important in the development and function of the brain, and this change in ratio is thought to be linked to an increase in depression as well as a host of other diseases in western man. The conclusion of this narrowing of the gene pool is that as well as permanently discarding and losing genetics we are told are no longer useful, we use food genes that transfer undesirable traits that can negatively affect our health. There can be no doubt that we will need to cross back to these old genes to maintain diversity and strengthen our modern, vulnerable, and weakened genetic stock. It is also therefore absolutely vital we preserve the genes of old fruit, vegetables, cereals, and animals.

It is well recognized that intensive vegetable production techniques affect nutritional quality. Research conducted recently has shown that the mineral content of fruits and vegetables has

[1] *Any of various hoofed, even-toed, usually horned mammals of the suborder Ruminantia, such as cattle, sheep, goats, deer, and giraffes, characteristically having a stomach divided into four compartments and chewing a cud consisting of regurgitated, partially digested food.*

fallen by between 25% and 75% over the last 60 years. Little is known about these facts long-term, but there is no doubt about their effect on human health. These are just two illustrations of the negative impact of bad food on our health, and the cost of this, in terms of medical care, is and will be colossal. Lady Eve Balfour who founded the Soil Association in the 1930s said that we should look at our food as our primary health care. The old saying of "we are what we eat" is very apt but as I heard an American speaker say at the Slow Food[2] Conference a month ago in Italy, "we are what, what we eat, eats."

The Alternative

I believe that there is a way of changing this cycle of domination, dependency, and insecurity. There is an alternative, but it does need a change in the way we think both as producers and consumers. It means that we should be prepared to pay more for our food, and I know that goes very strongly against the tide of our "cheap" food policies. Part of this change can come from educating the consumer and part can come from a change in government policies. If the true cost of intensive farming is recognized and understood, then the encouragement of sustainable farming starts to look like a favorable option.

The organic farm that I manage I hope goes some way towards making a reality of the saying: "we should live as though we are going to die tomorrow, but we should farm as though we are going to live forever."

2Slow Food is an international association that promotes food and wine culutre, but also defends food and agricultural biodiversity worldwide, www.slowfood.com.

DAVID WILSON

David Wilson is Farm Manager of the Duchy Home Farm at Highgrove and has been there since it was established in 1985. The Home Farm covers some 1,800 acres and completed its organic conversion in the early nineties. The enterprises on the farm include dairy, beef, sheep, pigs, cereals, and vegetables. Produce is marketed through a number of different outlets including Duchy Originals, local wholesalers and retailers, local millers and schools as well as a local vegetable delivery box scheme. David spent 6 years on the council of the Soil Association (the leading organic licensing body in the UK) and continues to foster close links with this organization. One of the key roles of the farm is to help change the way conventional farmers perceive organic agriculture through the principle of "seeing is believing."

The Context of Food Security

Frederick Kirschenmann, Ph.D.

Synthesizing a conference as rich and diverse as this one has been is simply an impossible task. So I will try, instead, to provide some context for our further conversations and deliberations on this important issue. Michel Nischan already started us down this path in his opening comments. He said food security was about "the deeper meaning of what food does for us"—that it was about "the subtle ways that our food security is threatened—by disease, hunger, and poverty." And he reminded us that it was ultimately "really about business." Food security, in other words, is, at least to some extent, about the way we order our economic lives.

That insight provides us with some context for rethinking the complexity and depth of the food security issue. In our current social climate we might be tempted to think of food security as simply a military issue. But as this conference has made clear, that is definitely not the case. Food security is not just about how we "protect" our food supplies and guard them against terrorist attack. It is about how we grow our food and how people gain access to it. It is about how we organize our businesses and our communities. It is about what we value in the global human family and how we use planet earth's finite resources. It is about what we value in our food and our families.

So what is an appropriate context for constructing a global and local conversation around food security?

It is now a generally accepted axiom that in order for our food and farming systems to be sustainable we have to consider the ecological and community as well as the economic components. Sustainability requires, furthermore, that all three ingredients be, to a large degree, self-renewing.

Consequently, if a secure food system requires that our food and farming systems be sustainable in the long term, which also seems axiomatic, then the same three components must be part of any food security considerations.

Most U.S. citizens, I suspect, have come to take food security for granted and so seldom consider this three-fold dimension of food security. Since food has always been abundantly available for most of us in our local supermarkets, the majority of us seldom think about the security of our food. So it is perhaps no surprise that the unexpected announcement by retiring Secretary of Health and Human Services Tommy Thompson, indicating that he could "not understand why the terrorists have not attacked our food supply because it is so easy to do," was met with a yawn by most Americans.

Yet as almost everyone at this conference has suggested, the three-fold dimension of food security is crucial. And I suspect for many of us there was also a tacit assumption that the three-fold nature of food security ultimately informs the role that military protection plays in our overall food security scenario.

In a poignant article which appeared in *Conservation Biology* two years ago, David Orr clearly outlined some of the connections between the ecology of food and our efforts to protect the food supply from terrorist attack.

> A society fed by a few megafarms is far more vulnerable to many kinds of disruption than one with many smaller and widely dispersed farms. One that relies on long-distance transport of essential materials must guard every supply line, but the military capability to do so becomes yet another source of vulnerability and ecological cost. In short, no society that relies on distant sources of food, energy, and materials or heroic feats of technology can be secured indefinitely... An ecological view of security would lead us to rebuild family farms, local enterprises, community prosperity, and regional economies, and to invest in regeneration of natural capital.[1]

Tom Lyson, in one of our working sessions, picked up on a similar theme based on the work of Charles Perrow. Perrow argued that complex systems that are "tightly coupled" can cause banal and trivial accidents to turn into catastrophes.[2] Our modern food systems certainly qualify as complex, tightly coupled systems.

But why have we built highly consolidated, complex, tightly coupled food systems if they are so vulnerable? The answer is that in constructing our modern food systems we have focused largely on the short-term economic returns that come from efficiencies of scale. And we have been able to sustain these systems because we have had abundant sources of cheap energy to fuel them.

Yet as William Tracy, plant breeder at the University of Wisconsin, points out, efficiency of scale operates *against* diversity. And diversity is essential to a stable, ecologically self-renewing system.

> Genetic diversity, crop diversity, cropping system diversity, farming system diversity, community diversity and intellectual diversity are needed. The merger-acquisition model of late 20th century economics continues today. Justification for such activity includes efficiency of scale which by definition works against diversity.[3]

So our modern, industrial food system seems to be caught in a dilemma. Our modern economy demands specialization and uniformity while resilience and sustainability require diversity and complexity. But this raises another question: Does the need for diversity and complexity mean that the only secure food system is one that is made up of small farms and small markets? Is big always bad and small always good? Are big systems always dysfunctional?

We should remember that economies of scale matter and are probably essential to a secure and reliable food supply that is ecologically sound. A research paper prepared by Rich Pirog at the Leopold Center for Sustainable Agriculture, for example, discovered that food produced and delivered in a local system actually consumes more gallons of diesel fuel, and therefore emits more CO_2 into the environment, than food produced and delivered through a *regional* food system.[4] In other words, in some respects bigger is better. It depends on how the system is organized.

[1] *David Orr, 2002. "The Events of 9-11: a View from the Margin," Conservation Biology. Volume 16, No. 2. April. 289.*

[2] *Charles Perrow, 1999. "Normal Accidents: Living with High-Risk Technologies". Princeton: Princeton University Press. 3-9.*

[3] *William F. Tracy, 2003. "What is Plant Breeding?" 17-18. (Paper presented at the Seeds and Breeds Conference in Washington DC, August 29. Available at http://www.rafiusa.org/pubs/puboverview.html.*

[4] *Rich Pirog, 2001. "Food, Fuel, and Freeways: An Iowa Perspective on How Far Food Travels, Fuel Usage, and Greenhouse Gas Emissions." 33. (Available at http://www.leopold.iastate.edu.)*

Perrow's analysis seems to concur. While size is a factor in the vulnerability of systems, in his critique, it is largely the way systems are organized, not their size *per se*, that makes them vulnerable. It is when systems are organized to allow components to "interact in some unexpected way" that simple accidents turn into catastrophes.

Paul Hawken has argued that if we want secure, sustainable human economies we should use the "example of nature."[5] Probably most of us would agree. But if nature is our model surely we recognize that natural ecosystems are seldom small. Mostly they are very big and very complex and highly interactive. Even when we view nature from what might seem like its minutest scale—a teaspoon full of soil, for example—we quickly recognize that we are not dealing with small, simple systems. We now know that a teaspoon full of soil contains over two billion soil bacteria: not exactly a small system. And when we view nature from another end of the scale—the universe, for example—it is vast beyond our imaginations and still expanding. Does that make it dysfunctional?

The point here is that it is not necessarily the size of our food enterprises that threatens their security, it is rather how they are organized. When systems are highly specialized, species dense, concentrated in one location, tightly coupled, and centrally managed using control management strategies, then they tend to be vulnerable. Systems that are diverse, dispersed, loosely coupled, and locally managed using *adaptive* management strategies are more likely to be resilient and self-renewing, even when they are very large.

"... IT IS NOT NECESSARILY THE SIZE OF OUR FOOD ENTERPRISES THAT THREATENS THEIR SECURITY, IT IS RATHER HOW THEY ARE ORGANIZED."

In addition to attending to the resilience of our food and farming systems, food security also requires that we attend to the resilience of our human communities. As Michel Nischan reminded us, "disease, hunger, and poverty" are part of the food security equation. We now have 6.5 billion people on the planet and we are adding another quarter million each day! 3.7 billion of that population are currently malnourished, and most of them live in poverty-stricken rural communities in the developing world. And since 1984 our global per capita cereal grain production has been declining. How do we ensure food security for all of the world's human communities under these circumstances?

Hunger, disease, and poverty are all part of the same equation. Food security cannot be reduced to a simple formula of developing technologies to increase the yield of a few cereal grains. Food security is part and parcel of healthy communities, and healthy communities are comprised of adequate per capita income, of social systems that give people access to land, credit, and markets, of an appreciation for local culture and local ecologies, of developing food systems based on nutrient density and optimal, sustainable production. Healthy communities are, in part, the product of humane politics.

Recognizing this complexity confronts one quickly with the realization that simply going organic is no more the solution to the problem of food security than simply developing a new technology to increase the yield of one or two cereal grains.

In all this, Ricardo Salvador reminded us that we need to step back and view all of this from the perspective of the big "era" changes in which we find ourselves. Based on the work of Ernest Schusky,[6] Ricardo pointed out that "extensive" agriculture, in which humans added

[5] *Paul Hawken, 1993.* The Ecology of Commerce. *New York: Harper Business. 209.*

[6] *Ernest Schusky, 1989.* Culture and Agriculture: An Ecological Introduction to Traditional and Modern Farming Systems. *New York: Bergin & Garvey Publishers.*

almost no energy except for human labor, began with the "Neolithic" era some 10,000 years ago. A new era, which Schusky calls the "neo-caloric" era, was introduced with the industrial revolution and came into its own in the 19th century. This "neo-caloric" era introduced an "intensive" agriculture that is heavily dependent on fossil energy. But since fossil fuel calories are "old" calories that were stored up in nature over billions of years, we will run out of them rather quickly, assuring us that the "neo-caloric" era will be, comparatively, a relatively short one.

So a major question confronting the issue of food security is: What will comprise the next source of energy and what will the next "era" of agriculture look like? Given the fact that no source of alternative *cheap* energy seems to be readily available to replace fossil fuels, Masae Shiyomi and Hiroshi Koizumi have raised an interesting question with respect to the future of agriculture.

> Is it possible to replace current technologies based on fossil energy with proper interactions operating between crops/livestock and other organisms to enhance agricultural production? If the answer is yes, then modern agriculture, which uses only the simplest biotic responses, can be transformed into an alternative system of agriculture, in which the use of complex biotic interactions becomes the key technology.[7]

Of course, the depletion of fossil fuels is only one of several challenges that must be confronted as we attempt to deal with the larger, complex issue of food security. Climate change, bringing with it greater climate instability, will likely be a major factor affecting food security, especially given the highly specialized production systems of the "neo-caloric" era which require stable climate conditions for consistent productivity. The dramatic increase in infectious diseases (35 new diseases in the last 30 years) will also present major challenges, especially for production systems that are based on high density and low diversity which are perfect vectors for chronic diseases.[8] The loss of biodiversity in most of our ecosystems contributes to more brittle ecologies, making food security over the long run even more challenging.

Together, these challenges may move agriculture toward an era in which food production is based much more on ecological rather than industrial paradigms. David Tilman, ecologist at the University of Minnesota, suggests as much. Given some of the challenges facing us, he suggests that "...it may again be profitable for individual farms, or neighborhood consortia, to have mixed cropping and livestock operations tied together in a system that gives an efficient, sustainable, locally closed nitrogen cycle."[9] Farming systems of the future, in other words, may consist of loosely coupled, decentralized, ecologically sound units and may therefore, simultaneously, also be less vulnerable.

So where do we go from here? Certainly a first step is greater awareness of the complexity of the issue. Hopefully this conference has made a small contribution to that end. We also need to develop a new language and new stories about food and agriculture. While some of the language and stories can be shared nationally or even globally, most of the stories will be rooted in local communities and local cultures and they need to be more widely shared and understood.

The stories that LaDonna Redman and Tristan Reader brought to this conference from predominantly African-American communities in Chicago and Native American communities in the Southwest were extremely important for all of us to hear. We learned from them that food security is not simply a matter of making sure that an adequate supply of affordable food

[7] *Masae Shiyomi and Hiroshi Koizumi (eds.), 2001.* Structure and Function in Agroecosystem Design and Management. *Boca Raton: CRC Press. 6.*

[8] *See David Tilman, 1998. "The Greening of the Green Revolution," Nature. Vol 396, 19 November. 212. And Carrie Brown, 1999. "Agro-Terrorism: A Cause for Alarm," The Monitor: Nonproliferation, Demilitarization and Arms Control. Vol. 5, No. 1-2, Winter-Spring. 6-8.*

[9] *Tilman, 1998.*

shows up in mainstream supermarkets. We need to address the fact that supermarkets for the most part don't locate in resource-poor communities because there is insufficient economic incentives for them to do so. And people in resource-poor communities often lack the transportation to travel to areas where supermarkets are located. Also, liquor stores, which are often the only purveyors of food in poor neighborhoods, do not stock the nutrient-dense foods necessary for basic health and nutrition needs.

Such stories, of course, remind us that food security ultimately *is* "about business." We have to wrestle with the difficult issues which attend to economic systems that extract wealth from one community to enhance wealth accumulation in another. In many parts of the world, rural communities have now essentially become raw materials suppliers. And since our economic system insists on obtaining its raw materials and its labor as cheaply as possible, those communities tend to lose the potential value of their resources. Since all of their income-producing labor is devoted to making cheap raw materials available, they must buy all of the expensive value-added products that they themselves consume from *outside* their communities. Consequently, *both* the value of their raw materials *and* the value of their earned income are extracted from their communities. That is the classic definition of a colonial economy. And colonial economies have historically been less than food secure.

In recent months, part of our political culture has been attempting to popularize the concept of "ownership societies," but we have given little attention to what a genuine ownership society might look like. What would a society look like in which African-American communities, Native American communities, Hispanic communities, and poor rural communities truly had an "ownership" role? What would we have to do to make such a society a reality?

One could reasonably assume that in such a society, food security would be enhanced since such communities would be more wealth-generating within the community instead of being subjected to the wealth-extracting enterprises on the part of other communities which own a majority of the wealth.

But, again, how do we get there? What can each of our organizations do to move us in that direction? What are the leverage points? How can we get access to the necessary capital? Who are our partners? What kind of research do we need and who can do it? Where does the issue of food security fit in to your organization's mission? Answering such questions may, perhaps, be a place to begin.

In the meantime, it might be well to reconsider what food security really means, and perhaps this conference has made a small contribution to that end. In that regard, I leave you with some thoughtful words by Ed Ayres in a recent issue of *Worldwatch* magazine.

> Even after the wake-up call, as the [9/11] commission slogged through its convolutions, none of its members was asking what the security of the country really means. Is it just about sealing all the leaks and tracking down all the evildoers, or might it involve managing the country in a way that offers a wholly different—less heavy-handed and intimidating, but stronger, healthier, and more inspiring—example for the world? If it is the latter, it would have to involve strategies that give as much attention to the content of entertainment media, school curricula, and public health services [I would add, healthy, affordable, nutrient-dense food in every neighborhood] as to surveillance cameras and police."[10]

[10] *Ed Ayers, 2004. "Editorial," World Watch Magazine, July/August.*

FRED KIRSCHENMANN

Frederick L. Kirschenmann, a longtime leader in national and international sustainable agriculture, has been director of the Leopold Center for Sustainable Agriculture at Iowa State University (ISU) since July 2000. Kirschenmann came to the Center from south central North Dakota where he operated his family's 3,500-acre certified organic farm. He holds a doctorate in philosophy from the University of Chicago, and he continues to oversee management of the farm and has an appointment in the ISU Department of Religion and Philosophy. Kirschenmann Family Farms has been featured in national publications including National Geographic, the Smithsonian, Audubon, Business Week, the LA Times, and Gourmet magazine. In 1995, Kirschenmann was profiled in an award-winning video, "My Father's Garden," by Miranda Productions, Inc. Dr. Kirschenmann has held national and international appointments, including the USDA's National Organic Standards Board. He is a board member for the Food Alliance, Silos and Smokestacks, and the Stone Barns Center for Food and Agriculture. In 2001, Kirschenmann received the Seventh Generation Research Award from the Center for Rural Affairs for his work in sustainable food and farming systems. He also was named a 2002 Leader of the Year in Agriculture by Progressive Farmer publications.

Working Sessions: Systems Perspective

The papers in these sessions explore the structure and trends in our existing food system, review the vulnerabilities created by this structure, then offer a positive vision for a food system that can be economically viable for producers, environmentally sustainable, and accessible for all communities and consumers.

Thomas Lyson, Ph.D.
Liberty Hyde Bailey Professor,
Development Sociology,
Cornell University

Systems Perspective on Food Security
Examines the impacts created by transnational "food chain clusters" on the farming sector, rural communities, and society in general.

Philip Rice, Ph.D.
Project Manager,
Sustainability Institute

Commodity Systems are Where Human Economy Meets the Earth
Discusses the commodity system, the stresses it places on the environment, farmers, and communities and suggests new ideas for the future.

David Wilson
Farm Manager, Duchy Home Farm at Highgrove

Sustainable Agriculture at Duchy Home Farm at Highgrove
A European perspective on the challenges facing small farmers, with insights from the sustainable production and rare breed enterprises at Prince Charles' Duchy Farm.

Systems Perspective on Food Security

Thomas A. Lyson, Ph.D.

Global Food Systems

The contours of a truly global system of agricultural and food production are quickly coming into focus. From biotechnology laboratories to the dinner table, large multinational corporations are taking control of where, when, and how food is produced, processed, and distributed. In a report to the National Farmers Union, Bill Heffernan (1999) identified three "food chain clusters," 1) Cargill/Monsanto 2) ConAgra and 3) Novartis/ADM, which have emerged as dominant political and economic forces in the agri-food system of the United States. In a similar vein, the Rural Advancement Foundation International (RAFI, 1999) published "The Gene Giants: Masters of the Universe," which describes how transnational firms are coming to dominate the market for agrichemicals, seeds, pharmaceuticals, and animal feed and products. According to RAFI, the food and beverage giants are the 'true titans' of the 'life industry.' Total retail sales of food worldwide are estimated at $2 trillion.

In addition to the food chain clusters described by Heffernan and the transnational 'gene giants' noted by RAFI, mass-production food processors and distributors, along with mass market retailers, have also become dominant fixtures in the American food economy today. As genetic engineering and related technologies become more widely used in the production and processing of agricultural and food products, transnational firms in the food and beverage industry are likely to form alliances with the seed, biotechnology, and agrichemical companies. Large-scale processors and retailers provide abundant quantities of relatively inexpensive, standardized goods. The degree of concentration in this industry has reached the point where the ten largest U.S.-based multinational corporations account for over half of the sales of food and beverages in the United States. All of these corporations have sales in the billions of dollars. Several international corporations, also with annual sales in the billions of dollars, such as Diageo (UK), Nestle (Switzerland), Unilever N.V. (Netherlands and UK), and Eridania Gruppo Ferruzzi (Italy), also control a substantial portion of the U.S. food dollar through their subsidiaries.

Today, the sheer size of the multinational food giants has important consequences for farmers and their farms. "Size brings economic power and this is particularly significant when set against the structure of the farming industry with its large number of relatively small producers. Some of the most dramatic recent changes in agricultural marketing are those that reflect the power of new markets to extract their requirements from the farming industry." (Hart, 1992:176). Large-scale processors and retailers centralize their purchases of farm products. Because they seek large quantities of standardized and uniform products, they have considerable power in dictating how and where agricultural production takes place.

More importantly, as economic concentration in the food industry continues to grow, the few giant firms that sit on top of the heap are being woven together into tight oligopolies by the men (and some women) who sit on the boards of directors of the largest firms. As Heffernan (1999) notes, "The major concern about concentration on the food system focuses on the control exercised by a handful of firms over decision-making throughout the food system. The question is who is able to make decisions about buying and selling products in a marketplace."

Agriculture and Food Production Systems

Several long-term trends have shaped America's food and agricultural system over the past 100 years. First, farm numbers have steadily declined. In 1910 there were nearly 6.4 million farms in the U.S. Today, there are about two million. Second, production has become concentrated on a small number of very large farms, and the most highly industrialized farms are clustered together in 'agricultural pockets' throughout the country. At the same time, regions of the country that at one time produced substantial amounts of agricultural products have seen farming all but disappear. Third, farms in every region of the country have become increasingly specialized, many producing only one or two commodities for the market. Fourth, with the exception of some dairy products, including fluid milk, and specialty produce, the linkages between local production and local consumption have been broken for virtually all commodities. Not only are large amounts of fresh fruits and vegetables, meat, and processed dairy products being shipped great distances, but once vital local food processing sectors have all but vanished from most regions.

Large-scale producers in the U.S. are accounting for an ever-increasing share of production. Consider that the number of America's largest farms, those with average sales of over $500,000 a year or greater, grew by over 500 percent, from 11,412 to 70,642 between 1974 and 2002. During this same period, the total number of farms dipped from 2.3 to 2.1 million.

Very large farms are more likely than smaller farms to receive government payments and to be organized as corporations. In 2002, very large farms, those generating over $500,000 a year in sales, comprised less than 3.3 percent of all farms in the country. However, they operated nearly 20 percent of the farmland and accounted for 62 percent of all farm sales.

At the top of the heap are the mega-farms, those operations with annual sales of one million dollars or more a year. In 2002 there were 28,673 farms in this category. These million dollar farms represent only 1.3 percent of all U.S. farms, but they produce almost 47.4 percent of all farm products sold.

Many of these large-scale operations have taken on the organizational characteristics and adopted sets of production practices that mimic the mass-production model of manufacturing. The guiding business principles are that production should be concentrated into fewer units to capture economies of scale, machinery should be substituted for labor whenever possible, and an advanced division of labor should replace the multiple and diverse tasks performed by the 'typical' family farmer.

Implications, Consequences, and Vulnerabilities

The implications of the changes that are taking place throughout the agricultural and food system are reverberating through the farm sector, rural communities, and society in general. Below is a list of some consequences of a highly industrialized, concentrated, and corporately orchestrated food system for farmers, farms, communities, and consumers.

- *Loss of Economic Independence* – Farmers, especially those that produce bulk commodities for the mass market, may become cogs of a large and growing agribusiness machine and will become locked into production regimes that they have little control over. Agricultural supply chains are forming that incorporate not only farms, but rural communities. This, in turn, is leading to a more centralized control of the food system. Through production contracts and other arrangements, large multinational corporations are able to exercise control over what, where, and when food is produced.

- *Greater Concentration of Production* – Today, a small number of farms accounts for the bulk of food and fiber in the country. Despite claims to the contrary, almost all technologies (machinery, chemicals, biotechnology) are not size-neutral. These technologies were developed to 'help' farmers produce as much food as possible for the least cost. Barriers to entry for new farmers, especially those who want to produce bulk commodities, will be high. Farming has become very capital intensive and is likely to become even more so in the future.

- *Loss of Technological and Genetic Diversity* – The genetic base of the world's staple foods is remarkably narrow. Only a small handful of varieties accounts for the bulk of production of many crops. Advanced agricultural biotechnologies are likely to be developed for only a small number of varieties. Use of these technologies will be standardized. The result will be a system of agriculture that tends toward monoculture production.

- *Increased Impacts that Result from Normal Accidents* – All systems (production, transportation, communication, etc.) are subject to accidents. There are no perfect systems. The consequences of an accident are magnified in direct proportion to the size of the system. A production system organized around smaller units (i.e., family-sized farms) is more resilient than a system organized around larger units. Accidents in a smaller system are easier to contain. Let me give an example: PBBs, a toxic fire retardant, were mixed into some bags of dairy feed in Michigan in the 1970s and distributed around the state. The result was that some dairy herds in the state ended up with large amounts of PBB in their milk, while others had none. When the milk was pooled, the level of PBBs was detectable throughout the food system but in doses that were not lethal to the general public. However, if the structure of dairy farming in Michigan looked like California or Arizona, where a few very large producers account for almost all of the milk produced, the consequences of mixing a toxic substance into animal feed could have been much worse for both farmers and consumers.

- *Loss of Rural Communities and an Economically Independent Middle Class* – Farmers and small merchants and manufacturers form the basis of civil society in the U.S. By increasing the concentration of agricultural production in rural areas and ceding control over production to large agribusinesses, we will further shred the fabric of civic community.

"THE AMERICAN PUBLIC DID NOT VOTE FOR THE AGRICULTURAL AND FOOD SYSTEM THEY ARE BEING PRESENTED WITH."

- Loss of Democracy – The American public did not vote for the agricultural and food system they are being presented with. The existing structure of agriculture and the organization of the food system are the result of decisions made in corporate boardrooms around the world. Smaller and middle-sized farms (i.e., "agriculture of the middle") provide an alternative supply chain to the industrially produced and highly processed foods found in most supermarkets. However, this important segment of the food system is being threatened by the economic imperatives associated with corporate agribusiness.

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THOMAS LYSON

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Commodity Systems are Where Human Economy Meets the Earth

Phil Rice, Ph.D.

Commodities that come directly from the earth—agricultural products, harvested products such as lumber and fish, and mined materials such as metals and fossil fuels—are the raw materials at the foundation of most economies and the basis of subsistence and material comfort. The natural resource economies that have grown up to harvest, produce, process, refine, transport, and market these commodities exist at the intersection of human systems and the Earth's systems.

Commodity systems are important, but they are not without problems. These systems can overshoot the sustainable harvest of the resource they depend on, as in the collapse of a fishery. They can produce more wastes than ecosystems can absorb, as in pollution from agriculture. They can push so far towards "efficiency" that communities of producers are pushed to the edge of economic survival as overproduction leads to lower prices.

The insights about the behavior of commodity systems described in this paper grew out of Sustainability Institute multi-year "action-research" projects within specific commodities: forestry in northern New England and corn production in the Midwest United States. Our thinking has been influenced also by our preliminary modeling of the shrimp system and years of participating in the international conversation on sustainable agriculture.

Our focus on commodity systems was inspired by two questions:

- Why, systemically, are places with rich natural resources so often on both the ecological and economic edge of survival?
- How can commodity systems be transformed so they are stable, sustainable, and equitable?

Commodity Markets are Standardized, Low-Priced, and Increasingly Global

The ability of commodity systems to extract materials, sort, process, and allocate resources to a multitude of final demands is not only extraordinarily complex but also life-maintaining for millions of people. Three basic organizing principles allow commodity systems to accomplish this extraction and distribution of raw materials on such a vast scale.

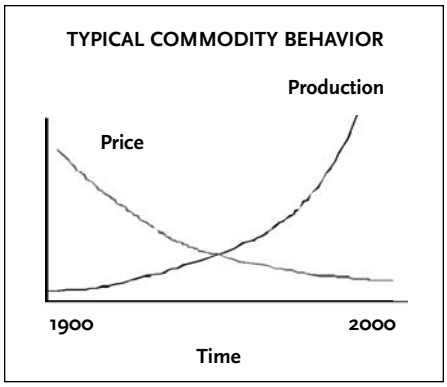
1. *Standardization*
   Traders and buyers move commodities as an undifferentiated stream of goods rather than as the identified product of a specific producer.

As knowledge of the ecological and social context of the commodity is removed, producers are left with very few grounds upon which to compete. This leads to the second organizing principle of commodity systems:

2. *The Lowest Price Makes the Sale*
   Producing the most undifferentiated product for the least cost is the secret to survival at the beginning of the commodity chain. Competitive advantage for producers in commodity systems comes from being able to produce for the lowest cost.

These first two organizing principles together produce the third organizing principle of commodity systems:

3 *A Drive to Open, Extend, and Liberalize Markets*
   With globalization, commodities can be produced wherever in the world the costs of production are lowest and sold to wherever people are willing to pay the highest price.



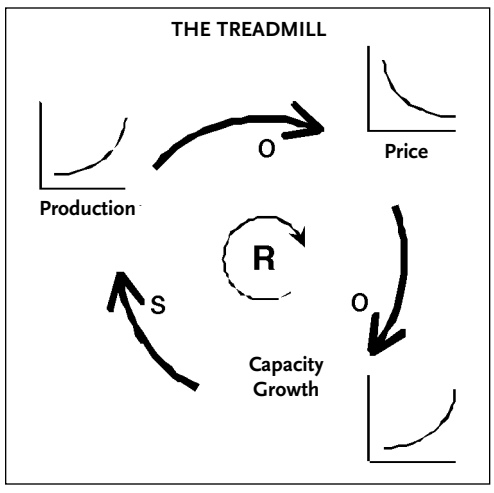
Together, these three organizing principles help explain the tremendous success of commodity systems at extracting, processing, and distributing products from the earth. And these three organizing principles produce the typical commodity behavior of growing production and falling prices.

Three Growth Drivers in Commodity Systems

Three key drivers produce the trend toward higher and higher production and the trend toward lower and lower prices per unit of commodity. Each driver is a chain of cause and effect that loops back to reinforce itself.

1. *Reinvestment*
   This is the core driver of industrial expansion. The most efficient producers reinvest profits in new capital equipment—from sawmills to tractors to fishing boats. In this growth process, production leads to more capacity for production.

2. *Demand*
   Rising production means that the commodity supply available on the market can exceed demand and push the average price down. Low prices, in turn, can boost demand for the product as more people can afford it. Climbing demand gives producers the confidence to invest in increasing production, pushing up supply, and pushing down prices all the more.



3. *Technology Adoption*
   In times of falling prices, individual producers try to maintain profits by reducing costs and expanding production volume. The higher efficiency adds up to more total production.

Combined, these drivers contribute to the enormous growth seen in most commodity systems over time. In agriculture, this dynamic has been described as a "treadmill" where individual farmers must produce more and more to remain profitable. The trend towards ever-expanding capacity

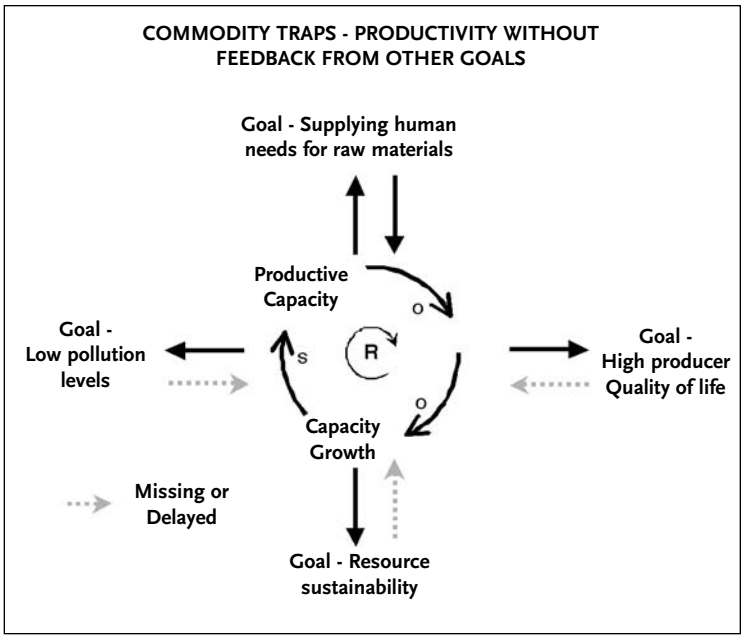
is exacerbated at the scale of global trade. As production exceeds domestic demand, many countries look to exports to the global market as a way to absorb their excess production. The result is that producers from many nations enter the same market, all competing to produce the most for the lowest cost.

Commodity Systems Face Three Traps

The benefit to consumers of ever-rising productivity to supply human needs for raw material is only one side of the powerful growth drivers of commodity systems. Commodity systems have another side—that of environmental and social crises. From fisheries depletion to hypoxia in the Gulf of Mexico to the poor standard of living of coffee bean harvesters, these problems are usually described and addressed in isolation from one another. But they all emerge from the same root cause. The growth drivers of commodity systems give rise to a tendency of these systems to fall into three traps of counter-productive behavior.

Trap #1: The Tendency of Commodity Systems to Exceed the Productive Capacity of Their Natural Resource Systems

Market signals, at best, do not prevent harvesting capacity from growing past the sustainable harvest limit. In some cases, market signals can even make the problem worse by encouraging investments in efficiency that increase the rate of use of the resource. Most players in commodity systems would benefit from actions to ensure that the rate of harvesting not exceed the sustainable yield. Because of delays in the system, such actions need to be taken well in advance of the point where the resource becomes obviously scarce.



Trap #2: The Tendency to Exceed the Ability of the Environment to Absorb Wastes

Because the costs of pollutant accumulation are rarely felt by the producers who generate the wastes, commodity systems on their own are not able to avoid overshooting the waste-absorption limit of the ecosystems they depend upon. Avoiding this trap requires the ability to slow investments in new commodity producing capacity or to increase investments in practices that reduce waste as soon as waste production exceeds waste absorption. Because of the delays and non-local effects of pollutants in the system, such actions need to be taken well in advance of the appearance of unacceptable levels of pollution.

Trap #3: The Tendency to Undermine Producer Income and the Health of Producer Communities

The growth processes that drive rising productivity and falling prices tend to erode the incomes of commodity producers and the social capital of producing communities. To avoid this trap, commodity systems must respond to declines in incomes or quality of life with measures to limit overproduction and stabilize incomes.

All over the world, people are experimenting with changes to the structure of commodity systems in order to balance productivity with other goals. Each of these experiments gives us a window into possibilities for creating sustainability in commodity systems. By understanding the successes and the vulnerabilities of these experiments, we begin to understand the packages of agreements, policies, monitoring techniques, and regulations that together would characterize a productive, efficient natural resource economy integrated into the ecology and the social fabric of its region.

Escaping Traps Using Collective Agreements

Each of the commodity system traps arises when the system is structured so that individually rational producer decisions (to become more efficient and productive) add up to collective system behavior (overproduction or harvesting) that erodes valued environmental or social resources. These have not been valued in economic terms. If producers come together and agree on new rules, they can restructure a system so that individually rational choices are also collectively sustainable.

1. Resource depletion or persistent low incomes are not inevitable in commodity systems.
2. Balancing the harvest rate with the regeneration rate is essential to sustainable commodity systems, even when the stock level is high.
3. Continued monitoring and responsiveness are needed.
4. Collective agreements do not need to depend only upon trust or "good will."
5. Interventions in the core growth driver can produce multiple benefits.
6. The boundaries of a collective agreement must include all of the producers selling into the market for the commodity.

Escaping Traps Using Certification

Certification, for either environmental practices, fair treatment of producers, or regional identity, provides one mechanism to incorporate environmental or social goals into a commodity system which is otherwise based on the lowest cost for a standard product. Whereas the collective agreement strategy requires finding sufficient political will among producers to work together to set limits on practices or production levels, certification strategies get their momentum from consumers' willingness to pay more for fair and careful production practices.

1. Certification is an important step in bringing multiple goals into commodity systems.
2. Certification changes the range of allowed practices, but it does not necessarily interrupt the core drivers of commodity systems.
3. Certification programs need to build in all the goals that are held for a system: social, economic, and environmental.
4. Voluntary consumer behavior is the power behind and the limit of certification schemes.

Escaping Traps Using Government Taxes and Payments

A third approach to incorporate social and environmental goals and avoid the traps of commodity systems relies on the unique powers of governments to shape incentives and rules.

Using the tools of taxes and incentives, governments can interject new goals in commodity systems so that producing the most for the lowest cost is no longer the only strategy of the commodity system.

1. Citizens can use the power of government to tax and reward specific practices that reflect multiple goals for commodity systems.
2. Taxing inputs to a commodity system can support waste and pollution reduction programs.
3. Even as governments introduce payments for "social goods" and taxes on "bads," the core drivers of commodity system behavior can remain in place.

The Most Successful Interventions are at the Core of Commodity Systems

The policies that intervene in the core of commodity systems are the interventions that are most likely to bring long-term stability to natural resource economies because they limit the growth processes that put pressure on ecosystems and communities in the first place. These policies—harvest limits, production limits, and supply control—tend to be the most difficult to bring into being because they contradict deeply held assumptions about the "free market" and its ability to balance supply with demand, and because they can be undermined if the majority of stakeholders don't participate in them.

Policies that leave the core drivers in place but change the context in which those drivers operate—certification, taxes, social and environmental payments—are easier to put into place because they can be started up by small groups and because they do not directly violate deep tenets of industrial society. Such programs can be very useful, especially because they do help to limit the damage caused by the core drivers and because they may create commitment to deeper change. However, because the core drivers are still in place, such solutions may solve one problem only to fall into another system trap.

New Thinking and New System Structure are Required

Traditional ways of thinking about efficiency and productivity restrain people from addressing the core drivers of commodity systems. Supply limits, harvest limits, certification for best practices, and taxes and payments based on stewardship all provide ways of expanding the orientation of our natural resource economies to encompass more than the traditional narrow definition of efficiency.

Changing commodity systems, as with all of the elements of the transition to sustainability, isn't just about new policies or new best practices. In the end it is also about changing the way we think. Our understanding of efficiency will need to broaden from economic dimensions to include also social and environmental dimensions, and this broader understanding will need to be incorporated into the rules and incentives of commodity markets.

The art of keeping commodity production within the capacity of the resource to regenerate, within the capacity of the environment to assimilate wastes, and within the capacity of producing communities to sustain themselves simplifies to a single principle. Feedback (information, incentives, regulations) about the state of the resource, the surrounding environment, and producing communities MUST be strong enough to counterbalance the inherent pressure to increase efficiency, scale, and level of production.

The more effectively an intervention deals with the core growth drivers of a system, the more likely it is that the intervention will "spring" multiple traps. The interventions that put limits on the growth of commodity harvesting or producing capacity are the most likely to bring long-term stability to natural resource economies.

It is VITAL that the boundaries of the solution match the boundaries within which the commodity is produced and sold. Harvest limits, technology limits, and supply control agreements only work if all of the producers selling into a given market are a part of the agreement.

Moving Forward

What will it take to reshape these commodity systems that lie at the heart of our economy and society? The research and stakeholder engagement described in this paper leads us to suggest that solutions lie in the following:

- harvest and supply control agreements,
- global standards for environmental and social practices,
- certified commodities and increasing consumer demand for them, and
- subsidy programs for social and environmental goods rather than bulk commodity production.

Creating truly sustainable flows of raw materials will also require working together across lines that have rarely been crossed. Producers, buyers, traders, and consumers from rich nations and poor ones—all will need to ask each other hard questions and listen to the answers:

- *With what do we want our commodity systems to be efficient?*
- *And what do we want our commodity systems to produce efficiently?*

These are not questions about system structure, certification protocols, tax policy, or quota levels, although society's answers to these questions give shape to tax policy, certification protocols, and quota levels. These are questions about values, meaning, purpose, and responsibility. And if we asked them of one another, we might learn that everyone—from commodity producers to buyers to consumers—wants these systems to be efficient with land, water, and soil as well as with labor and capital. We might see that all of us hope these systems could produce vibrant communities, biodiversity, clean water, and beautiful countryside, as well as plentiful raw materials.

Once we reach such a shared and broadened definition of the efficiency of natural resource economies, we will find that the policies, agreements, and programs to create sustainable commodity systems have been in plain sight all along.

PHIL RICE

Phil Rice joined Sustainability Institute in 1998, as Project Manager to work on the system dynamics modeling of commodity corn production. He is one of the principles on the curriculum development team creating educational materials to teach system concepts and sustainability to help grassroots efforts and philanthropic organizations target their efforts more effectively and with higher leverage. Phil received his M.S. and Ph.D. at the University of Wisconsin-Madison in the Physiological Chemistry Department where he studied gene regulation and gene function in bacteria and received a B.S. in biology from Haverford College. After postdoctoral work at Dartmouth Medical School studying mammalian virus gene expression and regulation, Dr. Rice developed his interest in system design and continuous process improvement at Genome Therapeutics Corp. where he lead the R&D and Quality efforts of the Genomics and Technology Development Department. He received training from High Performance Systems in systems thinking and systems modeling.

The full report, "Moving Sustainability into the Mainstream of Natural Resource Economies," is available from Sustainability Institute and is on the Institute website: www.SustainabilityInstitute.org.

Sustainable Agriculture at Duchy Home Farm at Highgrove

David Wilson

The 1,800 acre Duchy Home Farm is made up of 1,080 acres of in-hand land and 750 acres that is contract and share-farmed. All of the land is farmed organically to the standards of the Soil Association.

Enterprises

Unusually for a farm these days, there is a great mix of enterprises including 180 Ayrshire dairy cows, 100 Aberdeen Angus beef suckler cows, 500 Lleyn and Lleyn cross ewes, and a small mixed herd of rare breed Tamworth and Large Black pigs. The land also grows a mixture of arable crops including wheat, oats, beans, rye, and barley. A vegetable enterprise was started in 1998 and now rotates through 50 acres of the better, less stony land. This supplies a box delivery scheme of 140 families, 3 organic wholesalers, local schools, and the supermarkets. There is a staff of 9 including a couple who is solely involved with a vegetable box scheme.

Rotation

The key to this farming system is the rotation that is powered by clover. The 7 year rotation starts with 3 years of clover and grass. This is followed by winter wheat, spring oats, and spring beans, ending with either winter rye or spring barley in the 7th year before returning to clover/grass.

Clover

Clover is a highly undervalued crop that, due to multinational disinterest, is rarely promoted and, as a result, is very underused in modern farming systems. Clover has the ability as a leguminous plant to fix atmospheric nitrogen into the soil at surprisingly high rates. This nitrogen is then available to subsequent crops in the rotation. Clover has the advantage of high digestibility, producing grazing, silage, and hay of excellent quality, not just in terms of protein and energy but also in the higher levels of minerals it contains. Both red and white clover are grown in grass mixtures at the Home Farm and although they both fix nitrogen, they differ in other respects. Red clover is fast growing, high yielding, and short-lived (2-3 years). It has a large tap root and improves soil structure. White clover is stoloniferous, slower to establish but much longer lived. Because through the summer it has a steadier growth pattern and prostrate nature, it is better suited to grazing. White clover also will withstand greater damage from livestock in wet times.

Dairy

The Ayrshire dairy herd is one of the enterprises utilizing the clover and grass leys by converting them into milk. These nutritious leys mean that our Ayrshire cows are fed a

minimal quantity of concentrates (cereal-based feed). This not only keeps feed costs down but also keeps the cows healthier. Unfortunately, the modern Holstein is bred solely for production and, as a result, has an ever-decreasing health status. These cows carry very little condition, often looking skeletal, and have chronic metabolic disorders causing lameness, joint problems, and infertility, all of which are costly and difficult to remedy. The average number of lactations in U.S. herds is now around 1.7 and in the UK it is 2.9 and falling. The lower-yielding Ayrshire averages over 6 lactations and usually carries good condition all her life and looks how a cow should look. The cows average around 5,000 liters per year (1,100 imperial gallons or 1,300 U.S. gallons). 67% of the milk comes from forage and the remainder comes from the 730kg of concentrate they are fed each year which is mainly home-grown oats and beans.

"ONCE A BEEF ANIMAL REACHES 30 MONTHS OF AGE IN THE UK, IT CANNOT ENTER THE FOOD CHAIN."

Beef

The Aberdeen Angus beef sucklers give birth in the spring during April and the first half of May. This is when the grass is starting to grow and the cow is able to utilize this and suckle her calf through the summer until late autumn. At weaning in November, the cows and calves are housed separately. The calves are fed with clover grass silage and a small quantity of home-grown oats. The cows are fed on oat straw or barley straw to reduce the amount of body fat they carry. This is exactly what takes place in the wild; the fat that is piled on throughout the summer in times of plenty is used to "feed" the cow through the winter. By the following spring, she should be lean but fit and in the right condition to give birth easily. A cow that remains fat not only means money has been wasted on excess food, it also means she is more likely to have problems calving as well as being more prone to foot and joint problems. The weaned calves are turned out to pasture for a second summer and are finished in their second winter inside, on a clover and grass silage-based diet at 22 to 24 months of age. Unfortunately, once a beef animal reaches 30 months of age in the UK, it cannot enter the food chain.

Sheep

The flock of 500 Lleyn and Lleyn cross ewes also gives birth in the spring during March and April. Again, as with the suckler cows, it is the most natural time to give birth and utilize the spring clover and grass. Even more critically with sheep is the fact that the ewes only come into estrus in the shortening autumn days which, with a five month gestation, means that spring certainly is the time nature intended lambing to take place.

Reducing the risk of parasite burden in young lambs is a vital priority. Ewes and their lambs are turned out onto "clean" grazing. These are clover and grass leys that have had no sheep on them for at least a year. This ensures the lambs stay clear of worms for those important first three months. In late June/early July comes another critical time when the lambs must be moved to a new block of grazing. This period is known as the "July Rise" and occurs when a combination of cumulative temperature, day length, and reinfestation causes a massive rise in viable parasite larvae. After weaning in July, the lambs are developing a stronger immune system and are able to resist moderate worm infestations. Lambs start to fatten or finish from 3 months of age for strong, early born single lambs through to 9 months for some of the latest born lambs. After weaning, ewes are grazed on sparse keep to ensure their milk

supply dries up. They are kept on tight keep until the autumn when, just before the rams are turned out, they are grazed on the best pasture. This sudden change to a higher plane of nutrition at a time when the ewes are ovulating causes more eggs to be released which leads to a higher lambing percentage and is known as flushing.

Pigs

Both the Tamworth and Large Black pigs are rare breeds. The proportion of lean to fat on the carcass is very different to that of a modern hybrid pig. There is far more fat and less lean meat, but the fat is of a very high quality with a 'melt in the mouth' texture and excellent flavor characteristics. These pigs are marketed through a craft butcher who specializes in rare breed meat. The pigs spend their lives outside on pasture or in our woodland, and research has shown that even though pigs are monogastrics (like us), they need to graze plant material and are healthier if they do.

Composted Manure

When a 3 year grass and clover ley is planted at the beginning of the 7 year rotational cycle, a light dressing of composted manure is worked into the seed bed. Throughout the ley's productive life, composted manure is applied only during the growing season; winter applications can cause nutrient losses through runoff and lack of utilization by dormant plants. This is obviously bad for the environment but also means the loss of a valuable resource that should remain within the boundaries of the farm. Each application of manure is usually no greater than 5 tons per acre (sounds like a lot, but work out what goes onto the average garden). Composted farmyard manure is a product that appears to have a far greater effect on the land to which it is applied than either the quantity or nutrient analysis would suggest. This is due to the fact that during composting, the right sort of microbial profile is formed that in turn creates a healthy soil biomass. This supports the old adage of "healthy soil, healthy plants, healthy animals and people." The other advantage to composting manure is that the aeration and heating process will kill off pathogens and weed seeds.

Crops

Wheat – At the end of the restorative phase when the 3 year clover and grass ley reaches a peak of fertility, the exhaustive phase begins. It starts with the ploughing of the ley and the planting of winter wheat. Wheat is the "hungriest" crop in the arable part of the rotation and has traditionally always been the first crop sown. The main type of wheat grown is a tall-strawed, 40 year old variety called Maris Widgeon. The tall straw enables the wheat to keep ahead of weeds, and this old variety appears to have good disease resistance. The wheat is all ground locally at Shipton Mill and the flour is used to make Duchy Original Biscuits as well as supplying some local bakeries. The following autumn, after the wheat has been harvested and the straw baled, a catch crop is sown of stubble turnips, forage brassicas, and mustard. This grows fast from late August through until early November and creates good groundcover that holds residual nitrogen not used by the wheat. This can either be grazed later in the winter by sheep or ploughed under prior to planting the second crop in the rotation which is spring oats.

Spring Oats – These are planted in March if ground conditions allow and are harvested in August. Oats are less demanding in terms of fertility and therefore suit their second position in the rotation when the fertility has already been reduced by the wheat. The oats are used to make the Duchy Original Oaten Biscuits (the first product made by the company in 1992) as well as being used to feed livestock on the farm.

Beans – Again after harvest, a catch crop is sown to keep the ground covered before the third arable crop of spring beans is planted. The beans are planted to provide a source of home-grown protein for the dairy herd and for dairy youngstock. They are field beans and a mixture of two tall-strawed varieties are sown: one modern and one old. Again, the reason for planting these tall types is to ensure that the beans out-compete the weeds for light. Being a leguminous plant, the beans also leave behind some nitrogen.

Rye – The fourth and final arable crop is either winter rye or spring malting barley. Rye is a crop traditionally grown in areas of low fertility and is therefore well-suited to being the last crop in the rotation. It is also a very tall crop that grows aggressively during the spring, reaching heights of up to 6 feet, making it very competitive with weeds. The rye is sold to Shipton Mill and is milled for a number of small specialist bakers where it is used to make rye bread. The large quantity of straw is valuable as bedding for livestock in the winter. Rye is grown on a very small acreage in the UK.

Spring Malting Barley – This is a crop that needs lower nitrogen—too much can cause protein haze in beer when it is brewed. The variety grown is 99 years old: Plumage Archer. It was bred originally for Warminster Maltings in Wiltshire. This almost extinct variety is now growing again on a small commercial scale and is the key ingredient for Duchy Originals' Ales. These quality, bottled beers are brewed at Wychwood Brewery and the malt is again being made by Warminster Maltings, one of a handful of on-floor malt houses where barley is converted to malt using traditional hand methods and taking more time. The only downside with this old barley is that it is low yielding; it simply does not have the genes for yield. However, the flavor of the malt is excellent and noticeably different from modern types so it is almost a question of quality versus quantity.

Questions often asked about growing cereals without chemicals relate to the control of fungal disease, weed control, aphid control, and crops going flat. In an organic system where nitrogen is released slowly and is available at much lower levels than in chemical systems, these problems rarely arise. This is because the weeds associated with intensive farming are those that like nitrogen and grow very aggressively under this regime. In an organic system they pose no threat and just lurk harmlessly in the base of the crop without ever reaching any height. High nitrogen also increases water uptake and reduces the thickness of the cell wall of the plant, making it more susceptible to fungal disease and prone to going flat near to harvest. As well as this, high nitrogen also affects the immune system of the plant by indirectly reducing the secondary metabolites associated with disease protection.

Clover and grass are now established to once more begin the 7 year rotation.

Vegetables

Vegetables are grown on six foot beds and are usually planted in three rows. This allows as much mechanical weeding as possible, minimizing expensive hand weeding. A combination of a sweep hoe (L-blades and A-blades), rotary brush hoe, and flame weeder are used depending on ground conditions and the stage of plant growth. Some hand weeding is always necessary and is done using a bed weeder. This piece of equipment is attached to the three point linkage of a tractor fitted with a creeper gear box (extremely slow). It is made up of a wide frame covering three beds of vegetables, and mounted on the frame are nine "stretchers." Nine people then lie on the stretchers that are suspended just above each single row of vegetables. This allows them to weed by hand within the row of vegetables from a position of relative comfort. This is much easier on the human form and is also surprisingly

fast. Potatoes are grown in traditional ridges that are progressively built up during the early stages of plant growth which gives good weed control. Potato haulm is topped and burnt off with the flame weeder prior to harvesting in September. Carrots are harvested from August through until November using a top-lifting harvester. A top-lifter pulls the carrots out by the leaves, minimizing damage and leaving the soil behind. Once the first autumn frosts arrive, the carrot tops become weaker and the top-lifter is no longer effective. We then use a combination of the potato harvester and hand lifting to complete the harvest. Most of the carrots are still sold to the supermarkets, which means that their cosmetic appearance matters. The rejects, or outgrades, are regraded to remove the small number of bad roots, and the remainder (usually made up of slightly curved, forked, or in possession of too much green top) is sold to schools. The majority of potatoes is also sold to schools. The remainder of the carrots and potatoes is sold either through our weekly box scheme that delivers to 140 families within a 10 mile radius of the farm, or through three local organic vegetable wholesalers who often supply other box schemes further afield.

A wide variety of everyday vegetables are also grown on the farm, including brassicas, garlic and onions, salad vegetables, squash and pumpkins, assorted root crops, etc. These are sold through both the box scheme and two local farmers' markets.

Rare Breeds

As the Prince of Wales is Patron of the Rare Breeds Survival Trust, a number of rare breeds are kept on the farm. It is vital to keep these animals alive as, without doubt, their genes will be needed to reinforce the very weak and narrow gene pool. These animals are bred pure but are run as part of a main herd or flock. These breeds include Hebridean, Cotswold and Ryeland sheep, Tamworth and Large Black pigs, Irish Moiled, Gloucester, British White, Shetland cattle, plus the minority breeds of Sussex and Welsh Black.

DAVID WILSON

David Wilson is Farm Manager of the Duchy Home Farm at Highgrove and has been there since it was established in 1985. The Home Farm covers some 1,800 acres and completed its organic conversion in the early nineties. The enterprises on the farm include dairy, beef, sheep, pigs, cereals, and vegetables. Produce is marketed through a number of different outlets including Duchy Originals, local wholesalers and retailers, local millers and schools as well as a local vegetable delivery box scheme. David spent 6 years on the council of the Soil Association (the leading organic licensing body in the UK) and continues to foster close links with this organization. One of the key roles of the farm is to help change the way conventional farmers perceive organic agriculture through the principle of "seeing is believing."

Legal/Economic Perspective

The papers in these sessions outline how the failure of the government to aggressively enforce existing antitrust laws has allowed corporate dominance in agriculture with impacts on prices, competition, and access through the entire value-chain, and then identify innovative responses.

Doug O'Brien, Esq.
Senior Staff Attorney,
The National Agricultural Law Center

Antitrust and Trade Practice Policy
Reviews how the failure to aggressively enforce existing antitrust and trade practice policies, and corporate farming laws is increasing the current trend of corporate consolidation.

Michael Stumo, Esq.
General Counsel,
Organization for Competitive Markets

The Problem of Monopsony in Food and Agriculture
Uses economic theory to examine the impacts of consolidation and concentration in the agricultural sector and the problems associated with this activity.

Michael Shuman, Esq.
Vice President, Enterprise Development,Training & Development Corporation (TDC)

Say You Want a Local Food Revolution: Innovations in Ownership
Presents regional examples of local ownership structures that complement local food production enterprises.

LaDonna Redmond
President, Institute for Community Resource Development (ICRD)

Reframing Food Security for Urban Communities of Color
Highlights some of the barriers for urban communities of color in the movement to expand local and regional food systems.

Antitrust and Trade Practice Policy

Doug O'Brien, Esq.

I. Introduction

Farmers and ranchers have long advocated the use of antitrust and trade practice policy to curtail the power of firms that purchase agricultural commodities and sell agricultural inputs. Concerns about the market power of firms in the meatpacking and railroad sectors, and how this power affected farmers, pushed Congress to pass much of the antitrust legislation in the late 19th and early 20th centuries, including the Sherman Act, Clayton Act, the Federal Trade Commission Act (FTC), and the Packers and Stockyards Act. The question considered in this paper is whether these federal laws, along with state antitrust and trade practice policy, have the potential to protect farmers and consumers from the impact of consolidation and concentration. The short answer is that while antitrust and trade practice policy could continue to address some of the most egregious market abuses in agricultural markets, trends in case law and the real hurdles in passing more effective legislation make it unlikely that an activist antitrust policy will be enforced or legislated in the near future.

One must make a distinction between two different types of laws that address concerns related to the market power imbalance that exists in most agricultural sectors.[1] The first set of laws, generally known as antitrust policy, attempts to affect the structure of the industry either by reducing the size of a firm or by not allowing it to get bigger. For instance, the Sherman Act provides the federal government with the ability to actually break up firms that have too much market power and that actually abuse that market power. The Clayton Act provides the federal government with the ability to prohibit the merger of large firms if such a merger is likely to injure the competitive environment. Most states also have antitrust laws, although state attorneys general rarely have the resources to enforce the laws, and the state laws tend to use the federal law as precedent.

The second set of laws, sometimes called trade practice policy, addresses the behavior of the firms rather than the structure of the industry.[2] Examples here include the FTC Act's prohibition of unfair and deceptive acts and the Packers and Stockyards Act's somewhat comprehensive regulation of the stockyards and livestock auction markets. A number of state laws also exist that regulate agriculture contracts, such as Minnesota's law that requires fairly detailed disclosure of certain contract terms on a cover sheet of livestock and poultry contracts. This type of state legislation, frequently referred to as the Producer Protection Act, generally affects the contractual relationship between farmers and integrated companies and is the most active area in competition and trade practice legislation at this time.

[1] Economic Concentration and Structural Change in the Food and Agricultural Sector: Trends, Consequences, and Policy Options, *15 to 23, prepared by the Democratic Staff of the U.S. Senate Committee on Agriculture, Nutrition and Forestry (Oct. 29, 2004).*

[2] *See Michael C. Stumo and Douglas J. O'Brien,* Antitrust Unfairness v. Equitable Unfairness in Farmer/Meat Packer Relationships, *8 DRAKE J. AGRIC. L. 91, 99 to 111 (2003) (discussing the idea of equitable unfairness in a number of trade practice laws, such as the FTC Act and state franchise laws).*

A related set of laws, known as corporate farming laws, prohibits certain types of firms from owning farmland or engaging in the production of certain agricultural commodities, such as Iowa's law that prohibits most meatpackers from owning livestock. These laws are a combination of antitrust policy and trade practice policy in that they affect the structure of the industry (by restricting who can be involved) and the business activities within the industry (by affecting what can legally be done).

Together, these laws are designed to protect farmers and consumers from the harmful effects of excess consolidation. Such protection is limited, however, by the way the laws have been interpreted over the years. To illustrate this point, this paper will first discuss how the Department of Justice (DOJ) applies the Sherman and Clayton Acts, the classic antitrust laws that prohibit firms from capturing too much market power, and then looks at two recent federal cases, one dealing with the federal Packers and Stockyards Act and the other dealing with Iowa's law that prohibits meatpackers from owning livestock.

II. Enforcement of the Sherman and Clayton Acts

As a rule, the Department of Justice will not challenge market activity unless it "substantially lessens competition." As a proxy for this determination, DOJ will often look to the concentration of a particular market because a highly concentrated market is more likely to result in firms being able to engage in strategic behavior that harms other market participants. In recent decades, antitrust case law has adopted much of the teaching from the "Chicago School of Economics," which holds that a merger or other market activity should not be challenged unless the challenger can prove actual harm to consumers. This approach to antitrust law tends to ignore activity that might be likely to harm the competitive environment, but that is difficult to prove. Some in the farm sector are especially concerned that the Chicago School approach might allow certain market behavior that harms farmers because the activity does not harm consumers, such as when a merger of some type of food processor might lower the price of the agricultural commodity but not necessarily raise the price of the consumer product.

In the area of mergers, DOJ does not seriously review a merger unless it significantly increases concentration or results in a concentrated market.[3] To calculate the concentration of a particular industry, DOJ will first define the product market and the geographic market. Once this is done, DOJ applies the Herfindahl-Hirschman Index (HHI), which looks at the number of firms in the market and market share of each of those firms. (Technically, the HHI "is calculated by summing the squares of the individual market shares of all the participants."[4]) If the HHI is high, DOJ is more likely to review the merger. For example, it has been reported that the market for slaughtering steers and heifers has an HHI over 1,800, which places that industry in DOJ's category of "highly concentrated," while it is likely that the market for pork processors would be "moderately concentrated" because the HHI would fall between 1,000 and 1,800.

There are two kinds of concentrated industries: those that involve monopoly power and those that involve monopsony power. Monopoly power describes sellers' market power (such as retailers' power as related to consumers), whereas monopsony power involves buyers' market power (such as meatpackers' market power relative to cattle feeders). Although DOJ merger guidelines state that either of these types of power may violate the antitrust laws, many commentators feel that mergers that involve high degrees of monopsony power "tend to get less attention than those involving an increase in selling power,"[5]

[3] *Department of Justice Merger Guidelines, §1.0 (1997), available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/.*

[4] *Department of Justice Merger Guidelines, §1.5 (1997), available at http://www.usdoj/atr/public/guidelines/horiz_book.*

[5] *Warren Grimes, Smithfield Acquisition of Farmland Foods at 1 (Aug. 7, 2003), available at http://www.antitrustinstitute.org/recent2/261.pdf.*

which especially concerns smaller farmers because they are often selling products into relatively concentrated markets.

For a specific example of how DOJ applies the merger guidelines in the agricultural industry, in 1998 Cargill proposed to acquire Continental, thus merging two of the largest grain traders in what was a highly concentrated market. Generally, four firms (two of which were the parties to this merger) controlled between 70 and 100 percent of the export market from any given domestic port. The Department of Justice reviewed the merger and determined that if allowed to proceed as proposed, the merger would substantially lessen competition in a number of markets. To cure this problem, DOJ and Cargill/Continental entered into a consent decree that essentially stated that DOJ would not challenge the merger if Cargill/Continental agreed to sell off over 10 of its grain handling facilities to competitors, thus limiting the amount of market power Cargill/Continental would have in the affected markets. The lion's share of the deal went through untouched.

In another example, Smithfield Foods, Inc., the nation's largest pork processor, proposed to purchase Farmland Foods' pork processing plants in 2003. Although this acquisition provided Smithfield with approximately 30 percent of the nation's hog slaughter capacity, DOJ decided not to challenge the merger, apparently reasoning that the deal would not significantly harm competition because the geographic market of the Farmland plants (the upper Midwest) would still contain five active firms after the acquisition. In another recent example, the dairy sector has undergone a series of mergers in the last decade that has prompted DOJ to require a number of divestitures but has generally resulted in some very concentrated local markets for fluid milk and processed dairy products.

The lesson to be learned from these mergers is that DOJ is unlikely to challenge a merger unless the agency has clear evidence that the merger will result in a highly concentrated, strictly defined market. Nothing indicates that DOJ will change course in the near future to become activist in its antitrust enforcement. The Department will likely continue to look at only the most egregious mergers and activities.

Although people have no reason to expect antitrust enforcement to increase in the near future, they should not necessarily look to other federal or state laws to provide farmers and ranchers increased protection from the effects of consolidated markets. Case law in both the trade practice area and in corporate farming statutes has weakened the force of both of these laws.

"CASE LAW IN BOTH THE TRADE PRACTICE AREA AND IN CORPORATE FARMING STATUTES HAS WEAKENED THE FORCE OF BOTH OF THESE LAWS."

III. Packers and Stockyards Act and Captive Supplies

In *Pickett v. Tyson Fresh Meats, Inc.,*[6] a group of cattle feeders argued that the largest beef processor, Tyson (formerly IBP), violated the Packers and Stockyards Act (P&S Act) by manipulating the market for cattle in its use of captive supply. Captive supplies are cattle that the packer either owns or controls in such a way that they do not have to bid for them in the open market. The essential argument is that the packer is able to control the supply of cattle to the degree that the packer can affect the price of cattle that it buys from feeders on the open market. The jury returned a verdict for the producers for over $1.2 billion. The judge, however, set aside this verdict, reasoning that the packer had a legitimate business justification for utilizing captive supplies. As a number of appellate courts have in the recent decades, this district court focused on

[6] *315 F.Supp.2d 1172 (M.D. Ala. 2004).*

the economic efficiencies made possible by a certain practice, as opposed to focusing on how a particular practice might increase the likelihood of anticompetitive conduct. This case is now on appeal to the 11th Circuit.

As a precursor to the Pickett litigation, livestock producers in the mid 1990s petitioned the U.S. Department of Agriculture (USDA) to adopt a rule under the P&S Act that became known as the WORC rule (named after the rule's main organizational champion, the Western Organization for Resource Councils). This rule allowed for captive supplies but only if the contract to purchase the livestock included a firm delivery date and a firm price. The idea behind this rule was that with these firm contractual terms, it would minimize the likelihood that packers would be able to manipulate the market with captive supplies. The WORC rule garnered serious discussion in the USDA for a number of years, but no action was ever taken. Proponents of this idea have now moved their focus from an administrative solution to a legislative one and are pushing the legislation in Congress.[7]

IV. Iowa's Prohibition on Packer Ownership of Livestock

A number of upper Midwestern states have passed corporate farming laws in the past three decades with the goal of preserving family farms and the environment. In *Smithfield Foods, Inc. v. Miller,*[8] the nation's largest pork processor, Smithfield Foods, Inc., challenged Iowa's law that prohibits certain meatpackers from owning livestock. Challengers to these laws have appeared in the past few years and argued with some success that the laws discriminate against out-of-state interests and thus violate the commerce clause of the United States Constitution.[9] The meatpacker in this case essentially argued the discriminatory effect of these laws on out-of-state interests far outweighed any possible legitimate interest that the state might have in enforcing the law, such as to protect smaller farms from corporate firms. The district court in Smithfield agreed with the meatpacker; however, the fate of this case is still unclear because the appellate court (8th Circuit) that reviewed the case sent it back to the district court because the state legislature amended the law after the district court's opinion. At any rate, the effectiveness of these types of laws is in question not only because of the constitutional challenges, but also because the laws are sometimes easy to circumvent.

V. Conclusion

Antitrust and trade practice policy are important parts of our economic landscape. For over 100 years they have helped to stem some of the most egregious conduct engaged in by those with relatively great market power. But the reach of these laws is limited, and the current trends in case law and policy making have further weakened their effectiveness. Although these policies cannot completely stem the tide caused by consolidation, these policies should continue to play an important role in the attempts for a more competitive marketplace.

[7] *S. 1044 (108th Cong., 2003).*

[8] *367 F.3d 1061.*

[9] *Harrison Pittman,* The Constitutionality of Corporate Farming Laws in the Eighth Circuit, *National Agricultural Law Center (June 14, 2004), available at http://www.nationalaglawcenter.org/assets/articles/pittman_corporatefarming.pdf.*

DOUG O'BRIEN

Doug O'Brien grew up on a diversified farm in Dubuque County, Iowa. He is a graduate of Loras College, University of Iowa School of Law, and University of Arkansas Graduate Agricultural Law Program. Doug clerked for the Iowa Supreme court and served Congressman Leonard Boswell (IA) in Washington D.C. as Legislative Assistant, focusing primarily on the Congressman's work on the House Agriculture Committee. Doug has worked on agricultural concentration issues at the USDA for the Packers and Stockyards Administration, as associate counsel for the Organization for Competitve Markets, and as Counsel for the Senate Agriculture Committee. In addition to his work with the National Agricultural Law Center, Doug teaches in the Graduate Law Program at the University of Arkansas School of Law. He is also associated with the Drake Agricultural Law Center in Des Moines, where he works on efforts related to that Center's State and Local Food Policy Project and teaches occasional classes at the Drake Law School.

The Problem of Monopsony in Food and Agriculture

Michael C. Stumo, Esq.

A. Summary

A series of laws was passed in the so-called Populist Era of the United States to protect persons from the economic and, derivatively, political power of the large oil, banking and meatpacker trusts. They include the Sherman Act, Clayton Act, Packers and Stockyards Act, Federal Trade Commission (FTC) Act, and Securities and Exchanges Act.

The goal of these laws was to redistribute power and money to the masses and away from the large holding companies. Courts have watered these laws down through case law. Presidential administrations have enforced these laws only moderately or not at all. Economics has taken over the analytical core of case presentation. Chicago School of Economics adherents have successfully argued that efficiency justifies much concentration as well as trade practices that many of us deem problematic.

Litigation remains the most viable option to enforce the antitrust laws in this political era. State legislation is possible, especially in some rural states. Federal legislation is probably not realistic. Federal agency regulation is the best way to deal with agricultural issues but again is not terribly realistic by all appearances right now.

Monopsony and vertical integration issues are relatively new to the courts and economists. Agricultural antitrust is concerned with protecting farmers, not necessarily consumers, as is the case with most antitrust law.

The Organization for Competitive Markets (OCM) uses antitrust to promote social values—that distribution of wealth is better than concentration of wealth for rural America—but we argue from an economic perspective.

This report outlines some of these issues using the poultry and livestock industries as a case study. The core point is that monopsony is bad for economic productivity as well as for farmers and consumers. Federal farm policy has been based upon the goal of maintaining a diverse, family farm-based production sector and providing consumers with a nutritious, affordable food supply. These goals are being circumvented by horizontal concentration and vertical integration, which are driving farm prices down to subcompetitive levels and consumer prices above competitive levels.

B. The Problem of Horizontal Concentration

Basic economic theory, agreed to by both Chicago School and post-Chicago School economists, informs us that monopoly (one powerful seller) and oligopoly (a handful of powerful sellers) are potentially harmful to economic productivity because the dominant firm(s) has the ability to raise prices above competitive levels. This is accomplished by

artificially reducing supplies below an amount that would be produced in a competitive environment. In true OPEC (Organization of the Petroleum Exporting Countries) fashion, artificially reduced supplies increase prices. Artificially reduced supplies also mean less economic productivity because the economy is not operating at full production. Thus, the two-fold harm occurs in that consumers are charged high prices and overall economic productivity is dampened. This is "rational" behavior by Power Sellers who are maximizing profit, but it is harmful to the economic system.

On the buy side, basic economic theory, agreed to by both Chicago School and post-Chicago School economists, informs us that monopsony (one powerful buyer) and oligopsony (a handful of powerful buyers) are harmful to economic productivity because the dominant firm(s) has the ability to lower prices below competitive levels. Power Buyers reduce prices by artificially constraining demand (not purchasing for their full plant capacity) in order to artificially reduce price. Artificially reduced demand lowers input prices for, in this case, farmers and ranchers. Artificially reduced demand also means less economic productivity because the industry is operating at full production. This profit-maximizing behavior is "rational" for a firm but harmful for the economy. But, as explained below, consumers do not benefit when Power Buyers drive down supply prices.

Though the lay opinion holds that the benefits of low processor input prices—even if artificially low—are passed through to consumers in the form of lower consumer prices, serious economists engaged in the subdiscipline of industrial organization know that this is not true. This attractive "price transmission theory" does not exist in practice because the Power Buyers sell their output in a market with its own competitive dynamics, unrelated to the input costs. In other words, the "market clearing price" determined by supply and demand in the Power Buyers' *output market* is independent and separate from the "market clearing price" determined by supply and demand in the Power Buyers' *input market.* (Blair and Harrison, *Monopsony,* Princeton University Press, 1993). In fact, because Power Buyers generally have some sell-side power, their output prices are predictably above perfectly competitive prices to some degree.

The "price transmission theory," which is simplistically asserted by many to justify low farm prices as good for consumers, is thus false because each step in the food chain is a separate and independent market primarily determined by supply and demand and the level of industry concentration between buyer and seller at each market interface. In agriculture, this means that the input costs determined in the farm gate market are a minor factor in determining the market price in wholesale or retail markets.

Where a Power Buyer purchases in an input market in which it has significant market power and sells in an output market where it also has some market power, theory would predict an increase in gross profit or price spreads (the difference between gross per unit sale prices and cost of goods sold). This is what has occurred in agriculture to harm both farmers and consumers.

The dominant firms in processing and retail have increased their margins significantly in the last 10 years. For example, since 1994, the farm-to-wholesale spread in beef has increased by over 50% and in pork by over 43%. In poultry, processing companies have increased their net margin (wholesale price minus production and processing costs) by a whopping 193% since 1990. The wholesale-to-retail spread in beef and pork has increased by 35% to 37% in the last eight years. In poultry, retail prices have been held too high due to the tremendous increase in poultry integrator net margins.

The role of perishability is important in understanding the special monopsony problem that exists in agriculture. If the same market concentration exists in both a perishable and a non-perishable product market, the market power problem is more severe in the perishable market because of the narrow window of time in which the product can be sold. If you have to sell because your product will devalue or "go bad," then the buyer has a major tool for pushing your price down. The highly perishable nature of agricultural products (i.e., livestock and poultry grow beyond their most valuable weight rapidly and must be sold very soon) means that producers cannot withhold their product from the market in the hopes of receiving higher prices. Thus, producers have no ability to respond to artificially depressed prices by storing product. This is a recognized factor in antitrust law showing increased buyer power. (Todd v. Exxon, 2nd Circuit, Docket No. 01-7091, December 20, 2001.)

"... UNDUE MARKET POWER IS BAD FOR PRODUCERS, CONSUMERS, AND THE ECONOMY..."

The result is artificially high profits for processors while causing economic harm to consumers and livestock and poultry producers. This core realization that undue market power is bad for producers, consumers, and the economy has resulted in a significant diversity of interest groups becoming concerned about this issue. This is a national problem causing the destruction of independent farms and ranches, the depopulation of rural communities, and the price gouging of consumers.

C. The Problem of Vertical Integration

The cattle and hog sectors are partially integrated. Hogs are nearing full integration. Poultry is, for our purposes, fully integrated. The problems of partial and full integration will be discussed separately.

1. Partial Integration: Cattle and Hogs

The primary problems of partial integration, or captive supplies, in livestock are three-fold. First, demand is depressed for the open market livestock because packers bid less aggressively in the open market when they have a large quantity of their supplies committed. The open market is the source of price discovery for both the spot transactions and the contracts. If a packer has to slaughter 10,000 animals in a day and bid for all those animals in the competitive market, it must bid aggressively to acquire them all. The price of the last animal purchased is the "market clearing price" because it is the largest amount that the buyer is willing to pay and the smallest amount that the seller is willing to receive for that last animal.

However, as is closer to today's facts, if a packer has to slaughter 10,000 animals in a day and only must bid for 2,000 animals because the other 8,000 are committed through captive supply arrangements, it may bid far more conservatively for those animals. The "market clearing price" is set, in this scenario, on animal number 2,000 rather than animal number 10,000. The packer does not have to aggressively pursue the other 8,000 animals from other producers. The 1999 study of the cattle procurement in the Texas panhandle released by the U.S. Department of Agriculture (USDA) was consistent with this principle. It found a robust correlation between increased captive supplies and lower prices. (Schroeter and Azzam Report, 1999.)

Bob Peterson, former CEO of IBP, agreed publicly, stating before the Kansas Livestock Association in 1988 that "forward contracts coupled with packer feeding could represent a

significant percentage of fed cattle at certain times of the year. Do you think this has any impact on the price of the cash market? You bet! We believe a significant impact." We think it very hard to dismiss this admission from the executive of a dominant packing firm.

Second, when the price of livestock procured through formula contracts is tied to a market in which the packer participates, the packer has a tremendous incentive to negatively affect that market. Dr. Richard Sexton of the University of California-Davis recently published a paper showing the profit-maximizing strategies of packers, in mathematical terms, which can strategically use a combination of contract and open market procurement to push prices down and increase profit at the expense of producers. Dr. Wayne Purcell of Virginia Polytechnic University, who opposed the packer ownership prohibition due to his view of pro-competitive effects of captive supplies, recognizes this principle. Purcell stated in USDA testimony in 2000 that "[w]hether buyers attempt to manipulate the cash market to which the contract price is tied is somewhat immaterial because the incentive to do so is present and is undeniable."

Third, captive supplies result in very thin, or low-volume, spot markets. The spot market is important because it sets the price for all the livestock of all types and is the predominant factor for price discovery on the Chicago Mercantile Exchange. However, auction theory is clear that low-volume markets in which dominant buyers interact always produce lower prices than high-volume markets. Further, dominant buyers have far more ability to manipulate low-volume markets than high-volume markets.

Thus, partial vertical integration gives rise to powerful opportunities to manipulate markets and depress prices.

2. Full Integration: Poultry

The fully vertically integrated poultry sector has no open market price to manipulate. Rather, integrators generally enjoy regional monopsonies in which they contract with clusters of producers within a reasonable transportation distance of the processing plant. These regional monopsonies result from both geography and the industry practice of not competing for growers after a grower has a relationship with another integrator.

The producer-integrator relationship is not buffered by a market interface. Rather, it is directly controlled by the terms of a contract that is drafted by the integrator and offered on a take-it-or-leave-it basis to prospective growers. At the initiation of the contract relationship, the prospective growers receive promises from the integrator with regard to the legitimate expectations of a future relationship. The promises are generally oral and buttressed by brochures. No contract is presented or signed. Rather, a "commitment letter" that is not a contract is sent by the integrator for the grower to use to obtain a bank loan to build very expensive, single-use poultry buildings. Banks loan this money without a contract because their loans are federally guaranteed.

The grower never sees a contract until after the loan is obtained, the buildings are built, and the first birds arrive. As the delivery truck sits in the driveway, the grower is presented with a contract to sign. The contract is drafted by the integrator, not subject to negotiation or modification by the grower, and offered on a take-it-or-leave-it basis. The grower must sign because if he/she does not, the truck will back out of the driveway and the grower will have no birds to grow, no income, and a high, six-figure mortgage to repay. In other words, the prospect of tremendous economic losses to the grower resulting from not using the buildings for birds is staggering in amount. The grower must sign the contract.

Thus, the industry structure, custom, and practice give rise to tremendous opportunities for integrator abuse. The integrators have fully utilized these opportunities. The integrator has the ability to depress prices to a point where continuing a contract relationship is slightly better for the grower than bankruptcy. That is why the growers continue in a relationship that we on the outside would think irrational. The integrator can also extract non-price benefits in the form of contract terms that shift risk to the grower, impose significant duties on the grower, require mandatory arbitration in an unfair and expensive forum, and allow the integrator the right of unilateral contract modification or termination.

C. The Department of Justice Antitrust Division

There is no dispute that the Department of Justice (DOJ) has the ability to enforce the antitrust laws as they apply to monopsony. However, DOJ has rarely done so. DOJ has little inclination to so enforce because of their limited experience and the lack of monopsony-specific guidelines. DOJ also lacks guidelines to address the problem of vertical integration. The combination of vertical and horizontal consolidation results in very negative synergies which cause the harms discussed above.

DOJ should focus a portion of its staff on monopsony to develop policies and guidelines to address this problem and to inform and advise the litigation staff when considering whether to prevent a merger or enforce the antitrust laws. DOJ should reject the naïve approach of "price transmission theory," and it should also reject national market share as relevant for monopsony in agriculture. (OCM understands that DOJ cleared both Smithfield Foods and Cargill to purchase Farmland Foods pork this month in part because national market share in pork slaughter would not rise above 30%.) DOJ should incorporate the understanding that (1) regional monopsonies in agriculture create local harms that should be addressed and that aggregate into national harms (2) efficiencies are no defense unless actually proven rather than rhetorically asserted (3) perishability is a major factor in the power relationship (4) bad practices are not only likely to arise in agricultural processing because of concentration but have historically arisen even without the modern level of concentration (5) producer choice in marketing options is an antitrust harm just as consumer choice is a harm and (6) innovation will suffer with so few competitors.

From a legislative perspective, the lack of competition thwarts large portions of the hopes of federal farm policy. Subsidies are paid to producers selling in artificially low markets. Trade deals are sought with other countries to expand markets, but our producers sell into anticompetitive domestic markets. New uses are sought for farm commodities to expand demand, but the increased price spreads eviscerate the profit opportunities.

D. Conclusion

The breadth and depth of public support for increased enforcement of competition and fairness laws is tremendous. The general public does not agree that market failure is self-correcting without rules. The general public does not agree that undue economic power should go unchallenged. Lastly, the general public does not agree that our country is better off with a few firms dominating a sector rather than many competitors competing on price terms and innovating with new products.

Technology has evolved to the extent that small firms are as efficient as large ones. Small firms can be extremely innovative; indeed, they may be the primary source of innovation. Further, a diverse food production sector is deemed good by society in order to spread the

benefits of the food and agriculture economy widely so as to provide a needed economic stimulus to rural America's towns, communities, churches, and schools.

MICHAEL STUMO

Michael Stumo grew up on a small, diversified farm in Northern Iowa which included dairy, hogs, and row crops. He received a B.S. in agriculture from Iowa State University with High Distinction. Mr. Stumo then worked as a hog and cattle buyer before receiving a law degree from the University of Iowa with High Distinction. Mr. Stumo is the general counsel for the Organization for Competitive Markets and an attorney with Domina Law, PC in Omaha, Nebraska. The Organization for Competitive Markets is a multidisciplinary, national policy think tank focusing on competition and antitrust issues in agriculture. Its mission is to promote competitive markets for farmers, ranchers and rural communities. Mr. Stumo edited the policy book entitled *A Food and Agricultural Policy for the 21st Century* (2001) and has co-authored several articles regarding competition and fairness policy in agriculture, most recently "Equitable Unfairness vs. Antitrust Unfairness in Farmer/Meat Packer Relationships," Journal of Agricultural Law, Summer 2003.

Say You Want a Local Food Revolution: Innovations in Ownership

Michael H. Shuman, Esq.

Local ownership is a critical and often overlooked requirement for sustainable development and sustainable food systems. In my talk today, I'd like to review why local ownership is so important and then share three business experiments I've been undertaking—a venture capital fund, a local poultry business, and a buy-local entity—that may offer folks here new ideas about how to relocalize their own food systems.

Why Local Ownership Matters

"Sustainable development" is obviously a very hackneyed term. When we think about it seriously, there are at least three criteria that need to be met: the what, the how, and the who of production. The what of production is this: Are you producing food and energy that people in your community genuinely need, or are you producing Gattling guns and tobacco? The how of production is: Are you producing in a way that comports with high labor and environmental standards? And the who of production: Who owns the means of production? Who owns the factories, the banks, the farms?

Sadly, most of the literature on sustainable development says an awful lot about the what and the how but very little about the who. This is a huge oversight. We are in an era where a diminishing number of corporations are moving around the globe shopping for venues where they can produce their goods and services. And almost all our communities have decided to play the "business attraction game," with many adverse consequences. The best way to seduce globetrotting firms is through bribes. A while back, BMW came to the United States and asked various states, "What can you do to accommodate our locating a factory that has approximately 2,000 jobs?" The state of Nebraska said, "We'll give you $100 million in tax credits, capital improvements, and other forms of booty." Then the state of South Carolina said, "We'll do even better than that: $150 million and besides that, we are a state with low wages, no unions, and loose environmental standards." That did the trick. BMW went to South Carolina.

Over the last year, I've had the great pleasure of debating mainstream economic developers around the country. One of my favorite debates was with the "Pork Meister" of Lane County, Oregon, a guy named Jack Roberts, who recently was the losing gubernatorial candidate there. His idea of economic development has been to give enormous tax abatements to a small number of global companies, all to attract them to build factories in Lane County. About 95% of his tax abatements went to six companies from outside of the area. Three of them came and went. Two fell short of their job goals and only one was on target. The other 5% of the tax abatements went to several hundred

local businesses, most of which easily achieved their targets. Basically, the average dollar of tax abatement that went to a local business produced fifteen times more jobs than dollar subsidy to a non-local business. Was this just an accident?

Under closer scrutiny, local ownership confers several unique benefits on a community. First, local businesses are long-term revenue generators. Second, local businesses rarely move to a maquiladora[1] or to Malaysia. When global businesses suddenly leave, the tax base collapses, community services contract, and the economy plunges into a death spiral. This kind of catastrophe is less likely in an economy largely made up of locally owned businesses. The third advantage to a locally owned economy is that you can raise labor and environmental standards with confidence that local businesses will adapt rather than flee. The fourth advantage is that local businesses have a lot more room to succeed. A private owner is looking for the highest rate of return and doesn't care where it comes from and has no compunctions about shutting down or moving a faltering business even if it's profitable. A community owner, in contrast, is looking for a positive rate of return, not necessarily the highest, and will typically ride out the ups and downs of the business cycle.

An example of the virtues of local ownership is the Green Bay Packers, the only franchise in the National Football League not owned by a single obnoxious individual. Most other teams threaten to leave town if demands for hundreds of millions of dollars for new stadiums and salary increases are not met. When the city of Cleveland refused, Art Modell, owner of the Browns, took his team to Baltimore. The Green Bay Packers would never do this, because its shareholders are primarily the citizens of Wisconsin. The Packers have become a critical source of wealth generation and an economic multiplier for the community, one that has been and will continue to be around for many generations. The team cannot suddenly depart and punch a hole in the economy even if its rate of return might be higher somewhere else. If Green Bay ever passed a living wage ordinance, the Packers would have to adapt, since fleeing is not an option.

A final advantage of locally owned businesses is that they boost the economic multiplier. In the summer of 2003, economists studied the impact of a proposed Borders bookstore in Austin, Texas and compared it with two local bookstores. They found that $100 spent at the Borders would circulate $13 in the Austin economy, while $100 spent at the two local bookstores would circulate $45—more than three times the multiplier. The same economists just completed another study of Andersonville, a neighborhood in Chicago. A dollar spent at a local restaurant has 25% more economic impact than a dollar spent at a chain, and the local advantage is 63% more for local retail and 90% more for local services. Other studies, including some from outside the United States, confirm these results.

The reason local businesses have higher multipliers is simple: they spend more locally. Unlike chain stores, they pay local managers, use local business services, advertise locally, and enjoy profits locally. These four items alone can easily constitute a third or more of a business's expenditures. While it's true that generalizations are difficult and any comparison of a non-local and local business must look at the particulars of each business's expenditures and the multiplier characteristics of the economy, the fact that locally owned businesses almost always spend more locally means that almost always they will contribute a higher multiplier for the local economy.

Contrary to popular belief, place-based businesses actually constitute most of the U.S. economy. The U.S. Small Business Administration defines small businesses as firms having fewer than

1 A maquiladora is a Mexican Corporation which operates under a maquila program approved for it by the Mexican Secretariat of Commerce and Industrial Development (SECOFI).

500 employees and these account for half of private employment in the country and 44% of private payrolls. (A more restrictive definition of small businesses, counting firms with fewer than 100 employees, still accounts for about a third of private employment and private payrolls.) The private sector actually accounts for about 77% of gross domestic product (GDP), suggesting that large firms are responsible for no more than 42% of the economy. All of the other sectors—household employers (7%), non-profits (5%), federal government (3%), state and local government (8%)—are place-based. Place-based jobs therefore account for 58% of the economy.

Scale is the one factor that could crush local businesses. No matter how valuable they are for local multipliers and economic well-being, if they cannot produce goods and services that are competitive with those produced by larger firms, they constitute an illusory option for communities. Fortunately, there is a growing body of evidence that economies of scale are shrinking.

One important diseconomy of global scale industry is that vast, complex distribution networks often carry new costs. Consider food: in 1910, for every dollar Americans spent for food, 40 cents went to farmers and the rest to marketers and providers of inputs like seeds, energy, and fertilizer. Now, 9 cents go to farms, 24 cents to input providers, and 67 cents to marketers. These 67 cents are largely unrelated to the end product consumers really want. It's wasted on packaging, refrigeration, spoilage, advertising, trucking, supermarket fees, and middlemen. If farmers were linked more directly with consumers nearby, these inefficiencies could be wrung out. Either food prices would come down or farmers' meager incomes would go up, or both. These diseconomies, I believe, help explain the explosive growth of farmers' markets, community supported agriculture, urban farming, and other community food systems.

"LOCAL PRODUCTION FOR LOCAL CONSUMPTION, PARTICULARLY FOR FOOD, WILL BECOME MORE ECONOMIC."

The diseconomy of global food production is going to be made worse by the rising price of oil. Over the past six years, the price of crude oil has quadrupled to above $50 per barrel. Most serious analysts predict that this price is going to continue to rise; the only disagreement is about how rapidly and how steep this price rise will be. This turns out to be great news for local economies. Local production for local consumption, particularly for food, will become more economic.

The road toward a local revolution, however, is not without serious obstacles and dangers. In my view, here are three of the most significant ones:

- Capital – Even though place-based business accounts for most of the economy, very little investment capital is supporting these businesses: a huge market imperfection.
- Shareholding – One reason capital is not going to local businesses is that they are not structured to accept investments from outside stakeholders.
- Consumer Loyalty – At the end of the day, the biggest obstacle of localization is our own addictions to the goods and services from non-local business, driven less by price and quality and more by advertising, bad habits, poor information, and inconvenience.

To address these problems head on, I've been working on three experiments around the country. Allow me to share a little information on each.

Experiment #1 – Meeting Capital Gaps through Small Business Venture Capital

When I speak around the country, I usually ask audiences, "How many of you bank at a locally owned bank or credit union?" Nearly all the hands go up. Then I ask, "How many of you have pensions or 401k plans?" About two thirds of the hands go up. "And how many of you invest these funds in local business?" Maybe one or two hands go up, and I must explain that these folks are unfortunately mistaken.

The truth is that there are almost no institutions in the United States to facilitate equity investment in small business. If you examine the universe of finance, you find that only about a third is in categories with any significant local content: bank deposits, non-corporate equity (that is, family investments in business), and miscellaneous. The categories in the other two thirds—bonds, treasury bills, mutual funds, life insurance funds, and pension funds—have no local content whatsoever. They all are situated in a national, and increasingly an international, pool of investors. The skew against local is actually much worse, since probably most bank deposits and many family investments (think about the Walton family with Wal-Mart) are far beyond the hometown.

Some 58% of America's jobs are place-based and yet nearly all of the capital is going to support Fortune 500 companies. There are very few hedge or venture funds that invest in small business. These funds are interested in big action and assume that the transaction costs of performing due diligence on small companies outweigh the potential benefits. The absence of much of a track record from hedge or venture funds investing in small business means that pension and mutual fund managers believe they risk violating their ERISA-defined[2] fiduciary responsibilities if they put money into small business. Of course, this is a chicken-egg problem: you need a track record to attract institutional investment, but without institutional investment there is no track record.

The problem is not strictly legal, since almost every stage defines "fiduciary responsibility" in broad terms. The bigger problem is the conservative attitudes in the minds of fund managers. They believe that place-based investments are inherently risky because such investments are vulnerable to the inevitable ups and downs of the local business cycle. Better to diversify, they argue. The argument, however true (and I believe it isn't), needs to be weighed against the characteristics of place-based investments that can reduce risk. Among them:

- Local investment allows investors to actually inspect the company in which they are investing, to "reality test" the claims on paper, to sample the goods and services, to sniff out World.com types of fraud.
- Local investment allows for the possibility that investors also be consumers, which harnesses their enthusiasm as marketers and promoters within the community.
- Local investment in small communities or neighborhoods yields significant multiplier benefits for the community, which measurably improve the business climate. When South Shore Bank decided to extend home-improvement loans to 10,000 adjacent properties in a low-income neighborhood in Chicago, it was able to raise overall property values, enhance the underlying security of the loan, and reduce the portfolio's riskiness.
- Finally, localized investments offer the possibility of making multiple investments in businesses that buy and sell from one another, perhaps in the component firms of

2 ERISA stands for the Employee Retirement Income Security Act.

an industrial ecology park. Such investments, if carefully structured, can reduce the risks of any one firm failing.

In an effort to move the investment community in this direction, I've been working with some investors to create the Gulliver Fund in New Mexico. The goal is to create a place-based venture fund. Conventional venture funds seek to invest in high-growth, high-tech start-ups and then "exit," ideally through an initial public offering (IPO) on the New York Stock Exchange or NASDAQ, which obliterates any trace of local ownership in the firm. Gulliver seeks to invest in low-growth, low-risk small businesses that have been around for a while—perhaps a great restaurant that wants to open a second branch on the other side of town—and to exit through a direct public offering (DPO) within the state of New Mexico. DPOs are much cheaper than IPOs if stock purchase is restricted to locals since the U.S. Securities and Exchange Commission largely takes a pass on intrastate activities.

Experiment #2 – Creating Shareholder Opportunities through Chicken Stock

Intrastate DPOs have been around since the U.S. securities laws were enacted in the 1930s and 1940s but little used. Small business people don't have time to monkey around with any unnecessary legal expenses, and the investment community regards the small potatoes as unworthy of their efforts. What's been missing are success stories that convince both groups to reconsider. That's the rationale behind Bay Friendly Chicken (BFC), a company I've been trying to start on the eastern shore of Maryland over the past five years.

At one level, BFC aims to be a high-quality, locally owned poultry company that gives the two 800-pound oligopolist gorillas in the region, Tyson and Perdue, a competitive run for their money. It will produce natural, air-chilled chickens, pay living wages to all workers, observe high environmental standards, and be locally controlled. It will have two tiers of stock. The controlling tier of common stock is held exclusively by growers. A second tier of preferred stock—preferred in the sense of getting better access to dividends and other proceeds if the company goes out of business—goes to residents of the Chesapeake Bay Bioregion. Under a grant from the U.S. Department of Agriculture, we're now preparing a DPO in the state of Maryland for the second tier.

Under the slogan "Chicken Stock Is Good For You," we intend to recruit 10,000 $100 shareholders. These shareholders, in turn, will be our initial consumers. Many will opt for direct delivery, which we've calculated as being cheaper than going through supermarkets and more effective (it enables us to bypass slotting fees and other biases against local producers). All of the shareholders will be among the most important cheerleaders for the business's success, which will deliver millions of dollars of free advertising. Ultimately, we see many DPOs in a given state being traded on a virtual state stock exchange. I'm currently preparing a blueprint for doing this in Maine. I believe that state stock exchanges hold enormous advantages for local economy building:

- Much more equity capital would be available to support those businesses in the state that contribute most effectively to local income, wealth, jobs, and tax payments.
- Small business proprietors would see an escalation of value in their companies. The price-to-earnings ratio of stocks on the U.S. exchanges is 15-20:1, whereas the price-to-earnings ratio for small businesses sold privately is perhaps 3:1. The liquidity of a state stock market—which is where we are heading—would cause the ratio to fall somewhere in between, maybe 7-8:1.
- DPOs would provide small business proprietors nearing retirement an opportunity for exit without having to sell out to a national chain, which often destroys the value of the company for a community.

- This kind of social invention invites the collaboration of both conservatives and progressives and helps build new political bridges inside the state. Conservatives will like the focus on small business, market solutions, and state empowerment, and on the currently ill-defined "Ownership Society." Progressives will like the focus on local ownership and community empowerment.

Experiment #3 – Creating a Buy-local Company

The arguments I laid out earlier for local ownership underscore the community building promise of buy-local campaigns. Local purchasing is essential for local businesses not only to succeed but to thrive and expand. Fortunately, this is a moment in the U.S. economy when a growing number of consumers want to buy local.

An increasingly vocal minority of the American public appreciates, at some level, that favoring local merchants is good for the local economy. Here are some intriguing pieces of evidence of an emerging movement of consumers who want to buy local. A recent survey by the Leopold Center at Iowa State found that the percentage of food consumers who want local food far exceeds those who want natural or organic. "Green power," which provides consumers the option of having local renewable sources of electricity at a higher price, has taken off throughout the country. There are perhaps several hundred local currency systems nationwide (more than 4,000 globally) that induce consumers to buy locally. A growing number of managers of socially responsible investment funds report that their clients are seeking ways to invest their pensions and other savings locally. The Business Alliance for Local Living Economies (BALLE), which promotes locally owned business, has seen its chapters expand from zero to nearly two dozen in four years, with several thousand small businesses now involved.

This movement implies a large, expanding niche for enterprises that promote local purchasing. Consequently, a number of communities around the country have begun developing a number of kinds of "buy-local" devices, such as local credit cards, local debit cards, and local business gift cards. Greg Steltenpohl, the founder of Odwalla Juice Company, is currently trying to develop a national system, called Interra, which would connect these efforts. Each of these innovations carries intriguing benefits and challenges, but all at this point share one fundamental problem: they are untested and require expensive prototyping.

With my colleagues at the Training & Development Corporation (TDC) in Maine, I've been trying to develop a simple, low-cost tool for promoting local purchasing. The Worksphere Buyers Club builds on TDC's work in the Katahdin Region, in the impoverished middle of the state, to promote local purchasing through a bimonthly publication called Katahdin First. That publication contains an updated list of locally owned businesses along with articles about the logic of buying local, about model local firms and entrepreneurs, and about regional efforts to promote local businesses. Stuffed into the Community Press, each edition of Katahdin First reaches 4,000 residents.

The Worksphere Buyers' Club is like Sam's Club, only focused on goods and services from locally owned businesses. For a fee of $25 per year, a consumer receives a card that entitles him or her to a discount of at least 5% at participating businesses. If a consumer uses the card for at least $10 of purchases per week—say, one small grocery run—he or she will save money.

For a fee of $100 and a promise to give at least a 5% discount each year, participating local businesses are listed in Katahdin First and readers throughout the region are encouraged to prioritize their shopping at these businesses. In addition, qualified local businesses can take

out paid advertising in the paper. For the businesses, the incentive to participate is to increase their visibility, especially vis-à-vis chain stores, and to take advantage of the heightened loyalty to local businesses the initiative is promoting.

These fees and several other elements of the program were set after TDC held two focus groups in the region, one with about 15 businesses and another with about 20 consumers. The focus groups underscored that there is very strong interest in launching the Worksphere Buyers Club by both constituencies.

A key element to the Worksphere Buyers Club is the bimonthly paper. This vehicle provides an ongoing recruitment tool for consumers and businesses alike to participate. Along with the other elements of the program, we expect the Buyers Club ultimately to be financially self-sufficient.

Conclusion

Any or all of these experiments may not succeed, and the jury will be out for a long while. But I keep in mind Thomas Edison's words that it took thousands of light bulb design failures before he could come up with one that worked. So much is at stake—with our communities, our ecosystems, and our families—that we literally have no choice but to try.

As Patrick Henry once said of another revolution (with some minor edits in *italics*): "Why stand we here idle? ...Is life so dear, or peace so sweet, as to be purchased at the price of chains...? Forbid it, Almighty *Goddess.* I know not what course others may take; but as for me, give me *community* or give me death!"

MICHAEL SHUMAN

Michael Shuman, an attorney and economist, is Vice President for Enterprise Development for the Training & Development Corporation (TDC) of Bucksport, Maine. He has written, co-written, or edited six books, including most recently, *Going Local: Creating Self-Reliant Communities in the Global Age* (Free Press, 1998). In recent years Shuman has been promoting the concepts in Going Local through a variety of projects. At TDC, he is currently developing the concept of "global community capitalism" within the organization's Worksphere Initiative, with a think tank, a for-profit company (developing cutting-edge small businesses and promoting local purchasing), and a non-profit collaborative.

Reframing Food Security for Urban Communities of Color

LaDonna Redmond

Creating a context for local food security in urban communities requires shifting a number of paradigms. Mainly we must re-examine the social service delivery mechanism in light of community development. This will give us an additional opportunity to examine issues of race and class and their impact on land stewardship and more specifically, on sustainable local food systems.

The tendency to couch race and class identities in terms like "inner city" and "urban communities" is central to the idea which suggests that if we are to get more people to support sustainable agriculture and buy products produced by that industry, we must gain clarity regarding who we are talking about and what we want from them as consumers.

The inability to identify these consumers in the market contributes to the perception that most urban communities are identified as places where the need for public assistance (food, housing, employment) is and that these needs can only be met by organizations that are 501c3s or non-profits. However, part of the economic instability of many of these communities is the fact that it is generally accepted that there is NO money in this kind of community to support any kinds of businesses such as farmers' markets or grocery stores.

Pointing to the demise of local chain stores in urban communities, critics would say that this is indeed the market correcting itself. Yet correlation is not causation. Perhaps what caused the demise of the stores was related to the inability to service in style or with products. Therefore, the customers in due time found somewhere else to shop for better products with better customer service. In other words, urban consumers voted with their dollars.

Building an economic engine is not going to happen with a proliferation of non-profit social service businesses. The development of these organizations in terms of economic, environmental, and social sustainability is elusive. An unintentional consequence of these organizations is that they sometimes compound the very needs they are designed to address.

Food security is one of those areas that needs redefinition. Food insecurity has of course been used to address the needs of people that have limited resources and cannot buy food. However, food security has taken on a new meaning since September 11, 2001. The expanded meaning now includes the possibility that our food supply is vulnerable to attack by terrorists.

When addressing issues of food security in urban communities, one must consider that issues related to the environment, or more specifically to sustainable agriculture, are NEVER a topic of conversation or a reason for political organizing. The issue of land stewardship is largely overlooked and universally ignored in urban communities.

However, this is a missed opportunity that could serve to reconnect urban people to land stewardship, particularly reconnecting communities of color around a cultural paradigm. For example, many African-American residents of urban communities are one generation removed from the farm. Growing food is not a foreign concept.

The legacy of slavery and the ensuing discrimination faced by freed slaves in the South created Jim Crow laws and has helped divorce African-American people from any desire to "work the land." For the African-American farmer, the small family farm did not represent freedom or independence as it did for immigrants during the early and mid 1800s. A new form of slavery, sharecropping, enslaved African-Americans and robbed them of any opportunity to feel that the land was a place of nurturing or comfort. Land then is seen only as a place where trauma occurs.

In urban communities, the ways are not as important as what is. The fact that land stewardship cannot be central to an organizing strategy in order for urban communities to embrace sustainable agriculture is related to the negative connotation that many elders have regarding farming and the land. The land as it is related to slavery becomes one more thing to forget. Moreover, land then becomes a metaphor for something that is too painful to negotiate.

"THE LAND TRUST CREATES AN OPPORTUNITY FOR URBAN AGRICULTURE PROJECTS TO FLOURISH IN PLACES WHERE VACANT LOTS ARE CONVERTED TO URBAN FARM SITES."

In order to have a conversation about local food systems, one must come to terms with issues of race and class that are related to the foundation of agriculture in the United States. Those issues of race, ethnicity, and class continue to play out across the food system and are most evident in the areas of food production where Latino farmers are the workers on farms and where there is limited access to healthy, high-quality food in African-American communities.

The first step to redefining food security is to reclaim the principles of land stewardship for urban communities by using the techniques that have been applied in Chicago. Public and private partnerships have been forged to create a land trust that protects the future of community gardens. The land trust creates an opportunity for urban agriculture projects to flourish in places where vacant lots are converted to urban farm sites. The urban farm sites may not be able to feed entire communities, but they can certainly raise an awareness of the need to care for the land and offer some insight into the issue of sustainable food production.

The second step involves creating a market infrastructure that creates access to high-quality, whole foods. This is essential to developing new tastes for food that is seasonal and fresh. The built environment in urban communities is challenged by the lack of grocery stores. The stores that exist generally are filled with highly processed food products such as pop and chips.

Creating different tastes must begin with children and extend throughout the community. Farm to school programs that offer access to fresh fruits and vegetables can assist in changing tastes. However, these programs have to extend beyond idealistic talk about supporting small family farmers or niche organic farmers. Real value has to be placed on farmers that are growing food conventionally and are interested in perhaps incorporating more sustainable practices.

Other issues related to school include working directly with vendors to buy food locally so that those products are then available through the sources that school food service directors traditionally use. Understanding that a West Coast farm to school model is not practical in the Midwest, schools, vendors, and parents must consider the definition of local foods and maybe use the concept of the food shed.

To recreate the local food system, food must be used as a tool to organize community. In urban communities, awareness-raising activities must draw upon the rich cultural heritage that most people have in relationship to food. In other words, everyone eats. The necessity to eat then becomes the basis where everyone is equal at the table and information shared helps empower communities to choose for themselves what will create sustainable communities.

LaDONNA REDMOND

LaDonna is the President of The Institute for Community Resource Development (ICRD) in Chicago. Ms. Redmond has a Bachelors of Science from Antioch Collage and is currently a 2003 Food and Society fellow, a professional fellowship supported by the W.K. Kellogg Foundation. LaDonna became involved with sustainable food systems because her son Wade was born with severe food allergies and asthma. She discovered the best way to create meals that were healthy, nutritious, and free from pesticides was to purchase organic food. As an activist, Ms. Redmond and other residents formed the Austin Sustainability Project to develop a farmers' market on the West side of Chicago. Now four years old, the market has expanded to include other farmers from Illinois, Wisconsin and Michigan. The project eventually evolved into what is now the ICRD, and current projects include the development of a cooperative grocery store that carries organic food and other natural food products. Ms. Redmond and her husband Tracey are involved in developing an urban farm in partnership with the University of Illinois. The Institute has formed working partnerships with local institutions and organizations like Loyola University, Chicago State University, Heifer International, and Sustain.

Environmental/Public Health Perspective

The papers in these sessions review the connections between agricultural policy and both environmental and human health impacts, with particular reference to poor communities and communities of color.

Kate Clancy, Ph.D.
Senior Scientist, Union of Concerned Scientists

A New Perspective on Food Security: Environmental/Public Health Perspective.
Reviews animal production practices, the nutritional importance of phytochemicals, and obesity with emphasis on critical points of intervention, potential actions, research needs, and recommendations.

Keecha Harris, Dr.PH.
President, Harris Associates

Community Implications: Food Programs, Policies, and Access Issues
Examines the relationships among agricultural and food and nutrition policy and their impacts on food access in poor communities and communities of color.

Jeffrey Odefey, Esq.
Staff Attorney,
Waterkeeper Alliance

Are Environmental and Public Health Impacts Separate or Inherently Intertwined?
Outlines the environmental and public health impacts caused by industrial agriculture and concentrated animal feeding operations.

Nicolette Hahn Niman, Esq.
Attorney, Farmer

Summary of Remarks
Provides an analysis of CAFO-related violations of the EPA's clean water and air acts.

A New Perspective on Food Security Environmental/Public Health Perspective

Kate Clancy, Ph.D.

The discussion of food security and the place of nutrition and food safety within its rubric is at least 20 years old (see Busch and Lacy, 1984 and Clancy, 1986). Most interested people know the elements that have so frequently been singled out for attention (Table 1), as well as the myriad recommendations that have been made to attack the problem (Table 2). Therefore, I felt it would move the discussion further along if I 'teased out' the issues and identified several things. One is the critical points at which a particular issue might be most efficiently or usefully addressed. The second is actions that might be taken to address a problem. The third is what we don't know (research questions). The fourth is recommendations that come out of the analysis. I have only listed a few of the latter. Others should emerge over these two days.

I'm taking this approach because I believe that to change the discourse among policy makers and consumers around the meaning of food security, which differs so greatly from the one being espoused by Congress and the Administration, we need to:

1. make concrete arguments.
2. make sure the connection of any nutrition or food safety issue to food security, including hunger, is clear.
3. prioritize in this arena – there may be different priorities depending on the goal, there may be higher priorities than nutrition.
4. have a firm grasp of the task – not just to change discourse but to accomplish change.

I've developed three examples from the possible 14 in Table 1 to illustrate a kind of "logic model" that follows the issue to critical points for intervention, then to possible actions that could be taken, then to research needs, and finally to the recommendation stage. I hasten to mention that the examples I have chosen are only for illustrative purposes. This is certainly not an exhaustive list of points, actions, or research questions on any of these issues.

TABLE 1 – FOOD SECURITY: Food Safety, Nutrition, and Household Issues

Food Safety
- **Pesticides**
- **Antibiotics**
- **Nitrates**
- **Pathogens**
- **Additives**
- **Mycotoxins**

Nutrition
- **Calories**
- **Phytochemicals**
- **Nutrients**
- **Sweeteners**
- **Genetics**
- **Synthetic foods**
- **Product proliferation**

Household
- **Hunger**

TABLE 2 – ELEMENTS OF A SECURE FOOD SYSTEM
Re: Food Safety, Nutrition, Households, and Production

Food Safety

- More attention to prevention of human and animal disease
- More environmentally safe production (e.g., organic, pasture-raised)
- Safer technologies (e.g., processing)
- More humane production and processing
- More regulation
- More (or fewer?) fear-based messages

Nutrition

- Increased consumption of healthy food
- Healthy substitutions
- Less unhealthy food in the environment
- Increased true (genetic) variety
- More education geared to behavior change
- Decreased food advertising
- Moderate food-away-from-home

Households

- Increased welfare benefits
- Increased food stamp benefits
- More resources in WIC (The Special Supplemental Nutrition Program for Women, Infants, and Children) Farmers' Market Program, etc.
- Urban/community gardens
- More community engagement

Production

- Decreased overall production of some commodities (e.g., oilseeds)
- Decentralization
- Smaller scale production
- Smaller scale processing
- Appropriate trade
- Shorter transport distances

TABLE 3

ISSUE	CRITICAL POINTS	POSSIBLE ACTIONS	RESEARCH NEEDS	RECOMMENDATIONS
Human illness ↑ Antibiotic-resistant bacteria ↑ Antibiotics →	Growth promotion	• New genetics • ↑ Time fed • ↑ Trade and markets of antibiotic-free animal products	• Identify optimal breeds • Model costs • Review WTO/EU/other agreements/ policies	• Link issue to NGOs addressing trade
	Human use	• Prohibit those used by humans	• Use better info on health and cost analyses	• Keep Antibiotics Working Coalition
	Confinement systems	• Grass-fed/ pasture-raised • ↑ Humane systems • Free-range • Organic	• Regulatory issues • Processing needs • Examine labeling schemes • Model for U.S. producers for different species	

The first example is antibiotic use in animal production (Table 3).

As we know, non-therapeutic use of antibiotics in animals (the greatest surge is in poultry, matching the heavy use in hogs, and some use in cattle) leads to the development of antibiotic-resistant bacteria which can be transferred to humans. This causes increased use of antibiotics in the treatment of infections, increased severity of illness, and increased deaths. What seem to be the three critical points for intervention are:

1. remove the necessity of using antibiotics for growth promotion,
2. stop the use in animals of those antibiotics used for human illness, and
3. research and promote the adoption of non-confinement animal production systems.

Regarding the first, there are many possible actions, including (a) utilizing cattle breeds that grow faster in confinement systems (this can increase diversity as well) (b) altering some of the pieces of the animal production value chain that insist on fast growth and (c) increasing markets for animals grown without non-therapeutic antibiotics. Each of these requires more

research before the strongest case can be made to producers, regulators, and consumers. To deal with the problem of slower growth it is probably necessary to move to grass-fed production, but this is not yet an attractive option to many cattle producers. Therefore, there is a need to identify optimal breeds, maybe even encourage breeders to look more closely at breeds that can gain more weight without antibiotic use. If ranchers and chicken producers are going to wait longer to send animals to slaughter, they need to know what the costs of doing this will be and whether there will be a premium for what they produce. Finally, it would be useful to carefully determine the size of the domestic and overseas market for animal products raised without antibiotics and the legal or regulatory issues that exist in the trade arena.

There is a set of antibiotics critical to the treatment of human illnesses that is also fed to animals (tetracycline, penicillin, and others). These of course pose a great risk to resistance development and treatment complications. Some drugs have already been banned in animal production for this reason and others should be. To accomplish this, more data on health and cost dimensions are needed, although there is a bill being reintroduced by the Keep Antibiotics Working Coalition that would ban the non-therapeutic use in animals of antibiotics that are used in human medicine.

Finally, non-confined, grass-based systems are already on the scene, producing meat in a way that doesn't require non-therapeutic uses of antibiotics. Organic does too, and free-range could. But there are a lot of infrastructure and regulatory hurdles to get past before it will be easier for producers to consider these systems. There are food safety concerns to be addressed, especially with consumer groups, processing facilities to be developed (the small and mid-sized poultry processing infrastructure is almost non-existent), and labeling standards to be written.

The second example is phytochemicals (Table 4).

Because phytochemicals help prevent cancer and many other diseases, and the consumption of fruits and vegetables is low, there are a number of positive actions that can be taken to protect health and to build markets. With regard to health, there are new connections that might be made with medical and public health organizations to both alert them to new research findings (re: the increased amounts of these substances in plants grown in more sustainable systems) and help them with efforts to increase institutional purchase of these foods. A quite different set of actions relates to dietary supplements and what are called "functional foods," which are foods with identified "special" health properties. There is some research showing that antioxidant supplements can be harmful if taken in large doses and that foods (organic or not) are a much better source of nutrients than pills are. Also, adding isoflavones to potato chips to sell them as a healthy food doesn't help farmers or consumers. So we need to figure out who might be the most effective partners in a health coalition and be careful that sustainable agriculture partners are more knowledgeable about the nutrition literature than many have been.

I may be speaking too soon, though. There is a need for a great deal more research on the question of phytochemicals in organic vs. conventional foods before we can say with assurance that it is true, and quite a bit more time and effort is needed before it will be possible to make claims about it given Food and Drug Administration (FDA) regulations on health claims.

Then there is one more interesting point: the phytochemicals that are good for human health are bad for pests. This could be another selling point for organic production systems. However, this is another question that calls for quite a bit more research.

TABLE 4

ISSUE	CRITICAL POINTS	POSSIBLE ACTIONS	RESEARCH NEEDS	RECOMMENDATIONS
Fruits and vegetables (U.S. consumption low)	Help prevent cancer and other diseases	• Make connections to health professionals • Understand new research • Moderate supplement use • Engage problems with functional foods	• What type of coalition? • How to educate agies to understand these science issues • What institution/media?	• Look at health allies (Brigham & Women's Hospital, Hunger and Environmental Nutrition – American Dietetic Association (HEN-ADA) • 5 A Day for Better Health
Phytochemicals →	Increase in organic/ sustainable production?	• Much more controlled research • Definition of nutrients (FDA) • Consider claims	• More! • More!	
	Interaction of flavonoids, etc. with pesticides?	• Make case for plant rather than synthesized pesticides		

The final example is obesity (Table 5).

Obesity is very clearly a food security issue because of the increased disease burden, its contribution to health costs, and its effect on decreasing quality of life. I only address "calories-in" in this treatment, not physical activity, because of time constraints. In a short 15-year span, net kilocalories (kcal) available to the U.S. population increased by 300 kcal/day. These were in the form of added fat, refined grains, and corn sweeteners (high fructose corn syrup) and were more than enough to account for the extraordinary increase in overweight and obesity. For each critical point, it is obvious that the availability of healthy substitutes, a decrease in ads for high fat and sweet foods, and more nutrition education are necessary in order to change eating habits. Although it is complex, the excessive production of oilseeds and corn can also be tagged as contributing to poor health. Although intense efforts are being made to treat and prevent the condition, few of them show long-term success, and the federal research budget is abysmally low for obesity prevention.

One of the first things to look at is whether the concern about obesity is high enough now to address issues for which there were intense, but failed, efforts in the past. These include taxes on "unhealthy" foods and curbing advertising to children. We also don't have any good research on many things, such as how to get people to eat in moderation and how to

TABLE 5

ISSUE	CRITICAL POINTS	POSSIBLE ACTIONS	RESEARCH NEEDS	RECOMMENDATIONS
Obesity	Added fat (salad/cooking oil, cream)	• Healthy substitutions (e.g., vending) • ↑ Attitute change • ↓ Advertising • ↓ Oilseed production	• How to mobilize parents • How to model moderation • Any mechanism? • Model this for farm sector w/ reasonable assumptions and substitutes	
Calories	Refined grains	• Education? • Healthy substitutuions • ↓ Advertising	• What's working • What's acceptable • Any mechanism?	
	Corn sweeteners (1.5-63 lb/yr)	• ↓ Corn production (subsidies) • ↓ Ads • Taxes on soda • Healthy substitutions (water, milk) • ↑ Education	• New data, program ideas • Any mechanism? • New climate? • Institutuional analysis • What venue?	

change their attitudes and perceptions about weight (e.g., research shows that parents don't recognize obesity in their children or themselves). There is a great need for new insights and ideas re: effective education programs and how to balance the role of the food environment vs. personal choice. Finally, if there is to be any chance of dealing with the corn/soybean/cotton issue, we need economic models that show farmers how they can move out of, or diversify inside of, these commodity systems.

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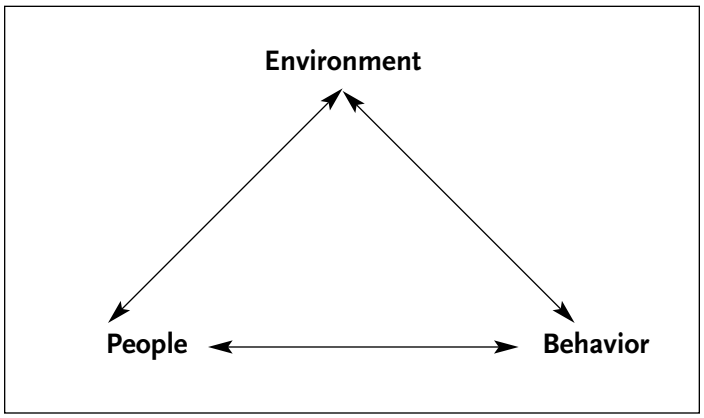
KATE CLANCY

Kate Clancy has recently assumed the position of Senior Scientist at the Union of Concerned Scientists. She formerly was Managing Director of the Wallace Center for Agricultural and Environmental Policy. She has also taught at Syracuse and Cornell Universities and worked as nutritionist and policy advisor at the Federal Trade Commission. She has spoken and written about the issues of agriculture, the environment, and nutrition for more than three decades, and has done research on sustainable agriculture policy, food security for low-income households, organic agriculture, food policy councils, television advertising, food safety policy, and a variety of other food system elements. Dr. Clancy has served on a number of boards, including those of Bread for the World and the Institute for Alternative Agriculture, and panels, including the NRC-Board on Agriculture entity that prepared the report "Alternative Agriculture" in 1985, the FDA Food Advisory Committee, and the Industry Values Panel on GMOs of the Center for Bioethics.

Community Implications: Food Programs, Policies, and Access Issues

Keecha Harris, Dr.PH.

There is a complex, symbiotic interplay among the individual, political, and institutional factors that govern how people produce, procure, and consume food. The interaction among these factors can be depicted as follows:



In the United States, poor communities and communities of color are disproportionately impacted by disparities in access to food, bear the brunt of chronic disease burden, and have structural and cultural environments that require serious consideration in food security dialogues. This document will present the broad framework of food security issues from a public health perspective, examine the complex interplay among the aforementioned factors, and recommend action steps for addressing these issues on the community level.

Through personal, political, and institutional practices, Americans have created a positive feedback loop that precipitously increases health care costs for obesity and its comorbidities. The American Obesity Association reports that obesity related health care costs of the top 15 causes of death were over $102 billion in 1999. The following statistics illustrate a few components of this multifactorial positive feedback loop.

- Advertising budget of top two fast-food chains in 2000: ~$1 billion
- Federal Five A Day program total budget in 2000: ~$4 million
- Less than 1/3 of children participate in moderate physical activity three times or more per week.
- Almost 1/2 of all family meals are eaten away from home.
- Childhood obesity rates have tripled over the last 3 decades.
- Nearly 2/3 of adult Americans are overweight or obese.

Clearly, there are other qualitative and quantitative factors associated with the obesity crisis which necessitate a systems perspective and approach in policy and program development.

The development of federal food and nutrition policy over time has largely been an extension of the development of agricultural policy. The United States Department of Agriculture food and nutrition programs developed as a result of the parody of want among plenty; food rotted in the fields while World War draft candidates failed to qualify due to abject malnutrition. An innovative approach was developed to expand the distribution of crops through a commodity-based system. While the primary purpose of this programming was to stimulate the economy through publicly subsidized markets, the nutrition needs of a country with undernourished subpopulations were met as never before. This system remains largely unchanged in its preference for underwriting the distribution costs of calorically dense, versatile grains that can be used for human and animal consumption as well as industrial and mechanical applications. Meanwhile, the United States is one of two first world countries without a child health agenda as 100 pound preschoolers struggle to play with their peers.

"CHILDHOOD OBESITY RATES HAVE TRIPLED OVER THE LAST 3 DECADES."

The interplay between consumer and corporate behavior is an interesting exchange to examine. Americans spent over $821 billion on food in 2000. We are projected to spend nearly $1.2 trillion by 2010. Individual food companies wish to gain their share of the pie and are consistently working to capitalize on the public's consumption patterns. Nearly half of all family meals are consumed away from home. Additionally, about half of 'tweens,' children between the ages of 10 and 12, eat while surfing the web. The food products and aggressive marketing that have ensued have paid off for many companies; nearly 90% of all American children eat at one major fast-food restaurant each month. Meanwhile, the same companies and many others have worked to reform their images by producing "good for you" foods and incorporating physical activity messages into their advertisements in the wake of recent food industry lawsuits.

Food access disparities disproportionately impact the poor and communities of color. These communities have less traditional and conventional food markets. Access to markets in neighboring, more affluent, and white communities is often limited by transportation needs. The West Austin Community in Chicago has over 100,000 residents with only two major grocery stores to serve their food needs. Meanwhile, the community is peppered with over 100 corner stores that are generally stocked with alcohol, tobacco, and prepackaged foods that are high in fat, salt, and sugar. There is an emerging literature that documents the relationships between food access, quality of nutrient intake, and health outcomes. The Atherosclerosis Risk in Communities Study examined the association between food environment and reported dietary intake in nearly 11,000 individuals. The results showed that African-Americans' fruit and vegetable intake increased by 32% for each additional supermarket in a census tract while that of whites increased by 11%. Quality of food access is an issue that can be addressed through community and institutional changes in food distribution networks.

Clearly, knowledge of sound nutrition practices is not enough to mediate differences in food intake and health outcomes. There is an emerging group of grassroots activities that address food distribution networks by influencing policy development and procurement options. Food policy councils examine the operation of local food systems and provide ideas or recommendations for how they

can be improved. They create ways to engage stakeholders around emerging issues such as local foods, direct marketing, environmental issues, and health outcomes. The Hartford Food System in Connecticut, one of the senior food policy councils, has developed dozens of projects, initiatives, and coalitions that tackle a wide range of food cost, access, and nutrition problems both regionally and nationally. Local food enterprises provide access to produce in many underserved communities. The Food Project in Boston engages rural, urban, and suburban youth in food production and distributed over 100,000 pounds of produce in 2003 through sales and donations. Farm to school initiatives have emerged as mechanisms for creating direct marketing opportunities between small farmers and schools and providing fresh produce to school children. These initiatives have been instrumental in allowing small producers to benefit from the purchasing power of school systems through the U.S. Department of Agriculture's school feeding programs.

The enormity of food access issues and their potential health impacts creates the need for innovation and collaboration at the community level. Over the past few years, there have been net decreases in public and private funds to promote programs and policies that address food access issues. Communities of color and poor communities are disproportionately impacted by lapses in food distribution networks and suffer the impacts of these disparities economically, environmentally, and personally. Now more than ever, comprehensive, multi-factorial approaches to addressing these issues from an assets-based perspective are indicated. Human and social capital, interdisciplinary networks, and policy development are the strongest options that we have for addressing food access disparities in vulnerable communities. Food policy councils and local food enterprises offer great potential for addressing food policy and procurement issues.

KEECHA HARRIS

Keecha Harris is President of Harris and Associates, a consulting firm based in Birmingham, Alabama. Her clientele reflects a diversity of outreach venues including community-based organizations, non-governmental advocacy groups, state and federal government, the academe, and philanthropy. Dr. Harris has communicated issues on nutrition, sustainable agriculture, and cultural competence through outlets such as the Atlanta Journal Constitution, National Public Radio, the Journal of the American Dietetic Association, Kegan and Gellis's Current Pediatric Therapy, and the World Congress on Child and Youth Health. She recently completed a Food and Society Policy Fellowship supported by the WK Kellogg Foundation in which professionals communicate messages on food systems to inform consumers, media, and decision makers. She is a consultant to the Kellogg Foundation's Food and Society Initiative. Ms. Harris is an alumnus of Iowa State University and the University of Alabama at Birmingham.

Are Environmental and Public Health Impacts Separate or Inherently Intertwined?

Jeffrey Odefey, Esq.

The response to this question, one which directly informs our society's relationship to pollution problems, is an unequivocal recognition that the adverse impacts of industrial agriculture affect public health and environmental integrity alike. To answer otherwise would be to create an artificial distinction between our human culture and the world which we inhabit. Industrial agriculture, whether the vast monocultures of corn grown on government subsidies or the giant barns of confinement-based livestock production, creates vast amounts of pollution. Excess nutrients and pathogens flood our waters, while antibiotic-resistant microbes and harmful gases mingle with the air we breathe. These releases have both short and long-term impacts on human health and the environment and in turn affect agricultural production and community integrity in rural America.

Industrial Agriculture and Rural Water Quality: Public Health, Environmental, and Economic Impacts

Rural water quality is emerging as one of the most prominent environmental issues of our time and one of the most difficult to address. Over the past thirty years, we have enjoyed great success in controlling flows of pollution from factory pipes and have been able to rediscover the joys of fishing, boating, and swimming in rivers and lakes that were once overly polluted. Yet water quality in the lakes, streams, and rivers of rural America has suffered over the past several decades from increased levels of pollution, primarily excess nutrients, pathogens, and fecal coliform.[1] To a considerable degree, many of the problems facing our rural waters can be traced back to agriculture and the changes that have transformed the production of row crops and livestock products.

"ANIMAL FEEDING OPERATIONS HAVE IMPAIRED 24,616 RIVER AND STREAM MILES."

Academic research projects and state or tribal water quality surveys confirm that the production of row crops and livestock in America is one of our most pressing environmental problems. Farms are among the largest sources of water pollution across the nation. Improper, or poorly implemented, management techniques cause excess nutrients, fertilizer residues, and pathogens to contaminate streams, rivers, and lakes. Agriculture is the leading contributor to impaired water quality in America's rivers and streams. Animal feeding operations

[1] *EPA, National Water Quality Inventory: 2000, at 13-14.*

have impaired 24,616 river and stream miles.[2] Researchers in Iowa found that the state's streams, lakes, and rivers had some of the highest nitrate concentrations in the nation. Over 50% of the time, watersheds that drained intensively fertilized row crops and dense concentrations of animal feeding operations had nitrate levels that exceeded the Environmental Protection Agency's (EPA) safe drinking water standard.[3] The large amounts of nitrogen and phosphorus that are transported to the Mississippi River from eastern Iowa represent an economic loss to farmers and a potential environmental threat to downstream waters. The estimated annual loss of nitrogen and phosphorus represents a potential loss in crop yield or the cost of additional fertilizer needed to compensate for that flushed from the fields.

CAFOs as Pollution Sources

By now, it is widely accepted that animal agriculture operations throughout the country are a leading source of water contamination in our rivers and streams.[4] Much of this impact is due to the widespread practice of confining cattle in open feedlots, and more directly, the spreading of animal manure as fertilizer in crop and pasture fields. However, over the past few decades, livestock production has been concentrated in fewer facilities on small acreages of land. Concentrated animal feeding operations (CAFOs) alone produce 910 million tons of waste per year, 90% of which is land-applied without any form of treatment to reduce nutrient or pathogen concentrations.[5] This situation has resulted in the production of excess levels of nutrients beyond the capacity of the land to absorb as fertilizer. The U.S. Department of Agriculture (USDA) reports that insufficient land exists in 485 counties across the country to land-apply manure without exceeding crop nitrogen needs.[6] In Nebraska, the amount of phosphorus in animal waste exceeds total assimilative capacity of all agricultural fields statewide.[7]

Excess nutrients, nitrogen, and phosphorus accumulate in soils, run off to nearby waters, and infiltrate into underground water supplies (groundwater), contaminating wells and often re-entering and contaminating surface waters. Nutrient-laden runoff from waste application areas can lead to eutrophication of receiving waters.[8] The result can be reduced habitat for fish and other aquatic creatures or even significant fish kills. The problem goes beyond excess nutrients, however. Irrigation, rain, and snowmelt can carry pathogens from fields treated with livestock manure. These pathogens, in turn, can contribute to serious, life-threatening illnesses in humans.

Habitat and Environmental Losses Caused by Industrial Agriculture

As well as nourishing crops, nitrogen and phosphorus serve as nutrients for aquatic algae: nitrogen primarily in freshwater, phosphorus in brackish or salt water. Excessive algae growth often plagues waters contaminated by CAFOs. These blooms, in turn, lead to loss of dissolved oxygen in the water, causing habitat losses and fish kills. In early 2004, millions of

[2] *Id.*

[3] *"Summary of the Major Water-Quality Findings from the Eastern Iowa Basins Study Unit of the National Water Quality Assessment Program," Stephen J. Kalkhoff, U. S. Geological Survey, Iowa City, IA, IGWA Quarterly, Fall 2000 (Volume 11, Number 3).*

[4] *EPA, National Water Quality Inventory: 2000 Report, at 13.*

[5] *EPA, State Compendium: Programs and Regulatory Activities Related to Animal Feeding Operations (May 2002), at 13.*

[6] *EPA, Environmental Assessment of Proposed Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent Limitation Guidelines for Concentrated Animal Feeding Operations (January 2001), at 4-6.*

[7] *Id.*

[8] *Jackson, L.L., Swine Manure Management Plans in North Central Iowa: Nutrient Loading and Policy Implications, 55 Journal of Soil and Water Conservation 2 (2000), at 205.*

menhaden[9] perished in a series of kill events that have been linked to excessive nutrient contamination of the Neuse River. Nutrient overloads, significantly from agricultural sources, are the primary cause of numerous "dead zones" in coastal waters surrounding the U.S. The largest of these, at the mouth of the Mississippi River in the Gulf of Mexico, is an area larger than the state of Massachusetts devoid of life.

Major livestock producing states generally experience 20 to 30 serious water pollution problems per year involving lagoon spills or contaminated runoff.[10] These spills typically result in fish kills, long-term disruptions to benthic communities, and continued habitat denial.

Public Health Impacts of CAFO Pollution

These environmental impacts caused by CAFO-borne pollution have parallel adverse effects on human health in major livestock production areas. The excessive nutrient loading found in small streams, or "headwaters," diminishes drinking water quality for private well owners and municipal supply recipients alike. For example, water in the Octoraro Reservoir, which serves 200,000 people in Chester and Delaware County, Pennsylvania, frequently exceeds safe drinking water levels for nitrate as a result of runoff from fields spread with livestock manure. At times, the Chester Water Authority pulls water from the Susquehanna River to dilute the reservoir water in order to meet drinking water standards. Even after treatment, nitrates are still detectable in the finished water at levels ranging from 0.2 to 7.6 parts per million (the maximum safe level is 10 parts per million).[11]

More disturbingly, high nitrate levels in groundwater drinking supplies have been linked to methemoglobinemia, also known as "blue baby syndrome." High nitrogen blood levels cause this occasionally fatal condition by interfering with oxygen flow to the brain. Water supplies may also be infected with CAFO-borne microorganisms such as *Cryptosporidium* and *E. coli*. Several notorious outbreaks of pathogenic disease have been traced to contamination of drinking water sources by livestock waste.

Numerous studies confirm dangerous levels of antibiotics and pathogens in water as a result of CAFO discharges. A study by the Centers for Disease Control and Prevention, for example, found both antibiotics and pathogens in groundwater near hog waste lagoons and pathogens in nearby surface water. Additional studies detected antibiotic-resistant bacteria beneath Illinois swine farms; *E. coli* and fecal *Streptococci* in groundwater near hog lagoons; unsafe quantities of fecal coliform in surface waters adjacent to CAFOs; the Utah Department of Environmental Quality detected bacteria in Utah surface waters from cattle feedlots; and The U.S. Geological Survey (USGS) found antibiotics in 16 of 31 Iowa stream samples. According to the Centers for Disease Control, pathogens in surface water threaten human health by causing outbreaks of infectious diseases. Antibiotic-resistant pathogens, which may arise from the overuse of antibiotics in animal husbandry, have had measurable consequences in the United States in terms of increased medical costs and mortality rates for certain infectious diseases.

[9] *The menhaden is a fish that is inedible to humans because of its bones, but provides forage for a number of other fish species. The menhaden is a filter feeder, scooping up large amounts of water and consuming both phytoplankton and zooplankton, leaving "cleaner" water. http://www.menhaden.org*

[10] *EPA, Environmental Assessment of Proposed Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent Limitation Guidelines for Concentrated Animal Feeding Operations (January 2001), at 3-1.*

[11] *Citizens for Pennsylvania's Future (PennFuture), "A Barrel Full of Holes: A Case Study of Pennsylvania's Regulations on High Density Livestock Farm Pollution" (July 2004), at 7-8 (available at http://www.pennfuture.org/ff/FactoryFarmCaseStudy704final.pdf.)*

Air Pollution From CAFOs

In addition to water contamination, CAFOs contribute significant amounts of air pollution. Rural Americans have long suffered from unbearable odors associated with confined livestock operations. CAFO emissions typically carry high levels of hydrogen sulfide and ammonia gas, both of which can cause illness and permanent injury to humans in the surrounding area. Health studies show that residents living within the vicinity of large hog confinements reported significantly more respiratory problems than other residents, reporting increased occurrences of headaches, runny nose, sore throat, excessive coughing, diarrhea, and burning eyes, as compared to residents of the community with no livestock operations.[12] In response to lawsuits brought by neighbors of hog operations, juries in Iowa and Nebraska, among other states, recently have imposed financial penalties on these CAFO operators for nuisance and loss of property enjoyment caused by odors.

ENVIRONMENTAL IMPACTS ON AGRICULTURE AND RURAL AMERICA

Diminished Agricultural Productivity

Public health impacts come home when they begin to fray the community fabric that binds rural Americans to their farms, their towns, and their way of life. The effect of pollution from large livestock or row-crop operations is an undermining of farming communities and their long-term viability as producers of commodities for the domestic and international market. As pollution and over-reliance on petroleum-based fertilizers and chemicals take their toll, lands become less fertile, demanding increased inputs to maintain nominal production rates, exacerbating contamination-related problems in the long run. Just as hyper-salination in over-irrigated farmlands takes thousands of arid acres out of production, excessive soil loading of phosphorus threatens to reduce the productivity of many crop acres or take them out of production altogether. This may come about as a result of "natural causes," as soil conditions no longer favor optimal crop production, or as a result of government regulation. Environmental protection requirements are forcing many states to limit manure applications from CAFOs in order to limit phosphorus soil levels. In some states, manure applications are prohibited on fields with excessive phosphorus levels.

Fragmented and Depopulated Communities

CAFOs, and their attendant impacts on health, the environment, and rural economies, have contributed to the depopulation of the American West and Midwest over the past 20 years. "Rural communities suffer division and real loss, as people near CAFOs move out, rather than hazard the respiratory complications that are common among CAFO workers and families. My family doctor, who lived around the corner from the largest facility, left last fall. His family had lived and farmed in the area for seven generations."[13] Nuisance issues, associated with environmental impacts such as air and water contamination, have led to devaluation of rural property by 50% or more.

Declining populations and dwindling public resources for those residents that remain are well-known challenges to rural communities. Current market conditions favor large-scale, intensive production of crop and livestock commodities. As this model pushes more and more small farmers off the land and further diminishes rural air and water quality, farming

[12] *See "Air Pollution Facts," Global Resource Action Center for the Environment (GRACE), available at http://www.factoryfarm.org/docs/AIR_POLLUTION_FACTS.doc.*

[13] *Janet Kauffman, "The Fantasy of the Clip Art Farm Notes from the New Rural Landscape," Dissent Magazine, Summer 2002.*

communities will struggle to maintain the quality of life advantage that appeals to new and current residents. If the heartland's streams aren't fishable or swimmable (and approximately 40% of them aren't) and if the air isn't fit to breathe (as respiratory disease rates among farm workers seem to indicate), there is precious little that rural communities have to offer. Again, the link is clear. The environmental and parallel human health impacts of industrialized agriculture will eventually diminish the agricultural production ability of American farmlands.

JEFFREY ODEFEY

Jeffrey Odefey is the Waterkeeper Alliance staff attorney responsible for that organization's Pure Farms, Pure Water campaign, a project devoted to addressing water quality problems associated with large-scale, industrial production of livestock and other agricultural products. This project offers support to member Waterkeeper Programs which are faced with agricultural pollution impacts and takes advantage of opportunities to affect change on a national level. Jeff represents Waterkeeper Alliance in a number of legal challenges, including our current litigation against EPA's new CAFO regulations. Prior to joining the Alliance, he served as an attorney at Hudson Riverkeeper, working on issues related to the New York City Watershed, the largest unfiltered public water supply in the country. Jeff holds a Bachelor's Degree in English and Art History from the University of Colorado, a Master's Degree from the University of Montana, and is a graduate of the Pace University School of Law. He lives in the Hudson Valley with his wife and two young children.

Summary of Remarks

Nicolette Hahn Niman, Esq.

Question Presented:

Is contract and industrial farming dependent on routine violations of laws intended to ensure clean air and water?

My Answer:

Probably. But we don't know for sure because industrial animal operations have never been forced to comply with existing environmental laws. This lack of enforcement is a form of subsidy to the concentrated animal industry. Until such operations are forced to comply with environmental laws through stronger enforcement of existing laws they are unlikely to change what they are doing since they save money through this non-compliance. The following is some discussion of specific laws that apply to concentrated animal feeding operations (CAFOs) and how these can and are being used to force such operations to bear their full costs of production.

I. MAJOR ENVIRONMENTAL LAWS (FEDERAL) (None of these laws are being enforced against concentrated animal operations, most of which routinely violate them.)

A. Clean Water Act (CWA)

1. *Substance of the law:* The Clean Water Act prohibits discharges from a "point source" of pollutants into most surface waters without a permit (referred to as an "NPDES (National Pollutant Discharge Elimination System) permit"). The Act itself defines "point source" to include CAFOs. Under the "citizen suit" provision, any affected citizen can bring a Clean Water Act case against a violator.

2. *Real world example: Waterkeeper Alliance cases.* In February 2001, Waterkeeper Alliance filed two lawsuits in North Carolina federal court against Smithfield Foods, Inc. based on the Clean Water Act and other violations. (The cases are called Waterkeeper Alliance v. Smithfield.) At the time, I was Senior Attorney for Waterkeeper and in charge of the litigation. In the cases, we based the CWA counts on four theories: 1) failure to obtain a CWA permit (officially called an "NPDES permit") 2) specific illegal discharges 3) continuous illegal discharges (seepage and runoff) and 4) drainage tiles in agricultural fields used for waste application. The first major test of these theories was when defendants filed a Motion to Dismiss all of the claims, which was then briefed and argued at an oral hearing in federal court. All of the theories were allowed by U.S. District Court Judge Malcolm Howard in a September 2001 opinion. The case is still being litigated and is currently in settlement talks.

B. Clean Air Act (CAA)

1. *Substance of the law:* The Clean Air Act prohibits air emissions of certain pollu-

tants beyond certain quantities absent a permit. Like the Clean Water Act, it has a "citizen suit" provision that allows any affected citizen to file suit for violation of the Act. For concentrated animal operations, the most important pollutants under the Act are probably hydrogen sulfide, ammonia, and particulate matter.

2. *Real world example: Sierra Club case.* Clean Air Act cases are harder to prepare and prosecute because air monitoring requires more expensive and more sophisticated equipment than water monitoring. However, they are likely the most promising source of future litigation and the Clean Air Act claims are probably as valid as the Clean Water Act claims. Sierra Club has had success in Kentucky using the Clean Air Act against a large chicken operation. (This case is called Sierra Club v. Tyson.) The EPA itself has also filed CAA cases against concentrated animal operations (e.g., in Missouri in a case called EPA v. Premium Standard Farms (PSF). In settling the EPA case, PSF agreed to monitor and reduce its air emissions.

C. Resource Conservation and Recovery Act (RCRA)

1. *Substance of the law:* RCRA prohibits disposal of solid waste in the manner that it enters the environment. Like the Clean Water Act and Clean Air Act, RCRA contains a "citizen suit" provision that allows affected citizens to enforce it.

2. *Real world example: Waterkeeper Alliance cases.* Our cases against Smithfield also contain counts under RCRA, which has been tried less frequently than CWA litigation but is no less valid. The argument is that application of manure to sprayfields at the rates typically being done by concentrated animal operations is not done for a legitimate agricultural purpose but is instead "disposal" of that waste. Our RCRA counts were filed under two provisions of the Act: 1) violation of the ban on "open dumping" and 2) violation of the ban on creating an "imminent and substantial endangerment" to human health by putting pathogens and other pollutants into ground and surface waters and air due to unsafe disposal practices. In his September 2001 decision, Judge Howard allowed all claims under RCRA to go forward.

II. STATE AND LOCAL LAWS AND PERMITTING (Some localities have been aggressive about passing laws regulating animal factories, largely because the federal agencies have been doing little to enforce the federal laws.)

A. State permitting programs: In meetings with state Attorneys General and Departments of Natural Resources in 2001 and 2002, we repeatedly were told that state agencies that are supposed to regulate concentrated animal operations are underfunded and therefore incapable of permitting and enforcement. However, this lack of funding does not give states the right to fail to require and issue permits or to sue for illegal discharges and emissions. Until approximately 2002, no state required all concentrated animal operations to obtain Clean Water Act and Clean Air Act permits. Since 2002, some states have begun doing so and the EPA has made it clearer in its new CAFO regulations (issued in 2003) that all states must implement some sort of permitting scheme.

B. Local ordinances: Some local communities, frustrated by inaction at the state and federal level, have taken matters into their own hands and passed ordinances regulating concentrated animal operations. Two examples of this are Worth County, Iowa and Chatham County, North Carolina, in which both were based on health concerns. Unfortunately, the pork industry successfully challenged both ordinances based on claims that they conflicted with state laws.

III. ADVOCACY OPPORTUNITIES RELATED TO LEGAL ISSUES (There are many.)

A. Media attention: Bringing "failure to enforce" messages to the attention of the public through the media can be extremely effective. The majority of citizens are rightly offended by the notion that someone is "getting away with" routinely violating the laws.

B. Citizen petitions: This process was effectively used by citizens in Michigan (through the Michigan Land Institute and Sierra Club) to force Michigan to start issuing permits to concentrated animal operations. Until that time, the state maintained that it was not required to implement a permitting scheme for CAFOs in the state.

C. Litigation: All affected citizens can bring litigation for violation of federal environmental laws. State and federal records of discharges and other violations can serve as the basis for these lawsuits.

NICOLETTE HAHN NIMAN

Nicolette Hahn Niman is an attorney who specializes in factory farms and is working on a book about the horrors of pig factories. She was Senior Attorney for the environmental organization Waterkeeper Alliance until April 2002, where she was in charge of the organization's campaign to reform the concentrated livestock and poultry industry. Previously, she worked as an attorney for National Wildlife Federation, the law firm of Early, Lennon, Peters & Crocker, PC, and the Durham County District Attorney's Office. Ms. Hahn Niman was twice elected and served two terms as City Commissioner for the City of Kalamazoo, Michigan (pop. 80,000). She received her Juris Doctorate, cum laude, from the University of Michigan and her B.A. from Kalamazoo College. She lives with her husband, Bill Niman, on a cattle ranch in Northern California.

Policy Perspective

The papers in these sessions highlight the impact of current agricultural policy on small and mid-sized farmers and identify specific policy initiatives that will begin to level the playing field between corporate and community-scale farming.

Daryll Ray, Ph.D.
Director, Agricultural Policy Analysis Center (APAC), University of Tennessee

Targeting Policy Toward Each of Three Agricultures
Discusses potential policies that might strengthen "farming as a livelihood strategy" and specifically addresses issues of supply management, humanitarian services, civic agriculture, and the "farmers in the middle."

Kathy Ozer
Executive Director, National Family Farm Coalition

Necessary Policy Changes to Improve Food Security
Provides an overview of current U.S. farm commodity policies that undermine family farmers by supporting pricing structures that benefit corporate, industrial farms over diversified producers.

Targeting Policy Toward Each of Three Agricultures

Daryll E. Ray, Ph.D. and Harwood D. Schaffer

The goal of "saving the family farm" is one of the pleas that has been used for decades to justify farm legislation and farm policy prescriptions. The proponents of farm legislation argue that federal farm programs are necessary to ensure that family farmers are not driven off the land. Opponents of farm programs point to declining farm numbers as sufficient evidence that these prescriptions do not, in fact, help save family farms.

The problem is that while the concept of "saving the family farm" has a gut level appeal that resonates with the American public, it is difficult to come to an agreement on its meaning. The conditions of agricultural production vary widely from crop to crop and region to region. Likewise, technological innovation has radically changed the labor and capital requirements of farming over the last three-quarters of a century. At one time and in one region, family farming meant forty acres and a mule. There was a time when family farming meant a farmstead on every quarter section of ground in many parts of the Midwest. Today, a husband and wife team, using the latest horsepower and hydraulics, can manage a 2,000 acre grain and hay operation in Kansas with very little hired help.

Those seeking to lend some measurable substance to the term "family farm" have suggested three characteristics: ownership, management, and labor. While the definitions vary from person to person, it is generally expected that on a family farm the producer would own at least some land and provide a majority of other capital. It would also be expected that the farm family would provide a majority of the labor and decision making (management) (Paarlberg).

Recently, Lobao and Meyer have used the term "farming as a livelihood strategy" (Lobao, 2001). When combined with ownership, management, and labor, "farming as a livelihood strategy" provides a clearer picture of what many consider to be family farms. Under current programs, as many as 94% of U.S. farmers are unable to earn a livelihood from their work on the farm. At the same time, the benefits of current agricultural policies are skewed toward producers whose annual sales exceed $250,000.

Since the size and composition of agriculture differ so widely, it is easy to understand why a single set of agricultural programs does not fit all needs. In this paper we look for categories or groups of agricultural operations that could be used as focal points to formulate agricultural policies that are better tailored to specific agricultural situations and needs. Of particular concern will be to identify governmental policies that support a structure of agriculture in which a family engages in agriculture with the purpose of earning a livelihood from that activity. Overall, the more targeted policies that we envision would distribute the benefits more evenly among the diverse set of agricultural producers.

There are a number of issues that we must take into account as we look at strategies that have the potential to strengthen the "farming as a livelihood strategy." Unlike automobiles, books, and computers, but like water and air, food is an absolute requirement for life itself. As a result, most governments show an interest in food production that they show for few other products. While in the midst of WWII, the U.S. government could convert automobile manufacturing lines to the production of armaments, leaving the public to find other means of transportation, but the availability of food was ensured through the use of ration coupons.

The agricultural sector, and particularly crops, is distinct from most other economic sectors in a number of crucial ways. The price elasticity of supply and demand is not sufficient to bring about a timely equilibration of the market. Just as a diabetic does not purchase more insulin in response to a price decline, so most people do not increase their aggregate food intake from three meals a day to four in response to lower prices. A decline in the price of lumber may stimulate more do-it-yourselfers to take on the weekend project of building a new deck, but lower prices do not significantly increase the aggregate demand for food. Lower prices may stimulate people to eat out more often and to pay for additional processing of the foods they prepare at home, but they do not significantly increase total food consumption.

Similarly, farmers tend to plant all of their acres under a wide price range. They may change the mix of crops in an attempt to maximize the revenue per acre, but they will plant all of their crop acreage particularly as long as the revenue per acre is above the out-of-pocket variable cost of production. Any dollar earned above that level can be applied to fixed costs like taxes. And on rented ground the producer has every incentive to use every acre possible. It makes no sense to rent ground and leave it unplanted. Unlike many other sectors where a few firms determine the size of the industry and can reduce production in an attempt to restore profitability, agriculture is composed of a large number of independent operations, no one of which can affect either price or industrial capacity. As a result, crop agriculture tends to use all of its productive capacity all of the time and let the weather determine the final production numbers.

One of the little recognized factors in low crop prices is the role of public investment in research and extension in increasing supply at a faster rate than population growth. The inevitable result of this supply increase in the face of an inelastic demand is lower prices. In this paper we are not at odds with the policy of public research in food production as a means of ensuring an abundant food supply for everyone. In fact, it would be immoral not to look for ways to ensure a sustainable supply of food adequate to meet the needs of the populace. However, if the government is going to interfere in the marketplace to increase the supply of food, then we would ague that it is appropriate for the government to put in place mechanisms by which that excess productive capacity can be managed for the long-run benefit of both producers and consumers.

From the earliest colonial period in the territory that became the United States through the 1920s, the primary public agricultural policies can be described as developmental policies. These policies were oriented toward the opening up and development of the agricultural lands of the country and included land surveys, land sales, land grants to war veterans, land grants to companies to encourage the development of railroads to open up vast agricultural areas, and the granting of homesteads for individuals. Today, developmental policies continue in various forms, including farm credit programs, rural electrification, support for land grant colleges, and the funding of agricultural research and extension.

The 1930s saw the introduction of compensatory policies that provided price and income support for farmers. Initially, the emphasis was on various mechanisms to support the price

of selected commodities, indirectly providing support for producers. Typical of compensatory policies were ones which included programs to store surplus commodities during periods when production was greater than demand, programs to provide non-recourse loans to farmers thus establishing a price floor, and acreage control programs to manage the use of the productive capacity of U.S. agriculture. In recent years, the emphasis has shifted to income-supporting programs that are decoupled from production.

The point of all of this is to argue that agriculture is different, and the public policies a society chooses to put in place for crop agriculture will be different from those one might use for restaurants, software developers, or pharmaceutical firms. The challenge for pharmaceutical firms is the high cost of developing new drugs and getting them successfully through the regulatory process. Therefore, some form of patent protection is necessary if we want the firms to continue to develop new medicines. Similarly, the challenge for agriculture is the very low price responsiveness of the market on both the consumer and the producer side. As we have seen, another challenge is public policies that have been put in place to ensure that we always have access to a safe, abundant supply of food.

The question, therefore, is not one of whether or not the government has any role in establishing a public agricultural policy, but rather how we tailor the policies in a way that addresses the unique characteristics of the agricultural sector and at the same time meets the needs of society as a whole. To that end, we will look at three sets of policies that provide a glimpse of what U.S. agricultural policy might look like if we seriously view the "farming as a livelihood strategy." One policy component is to reinstitute a program of supply management and humanitarian reserves. Secondly, we will look at policies that are needed to strengthen the role of civic agriculture. The last policy component is a set of policies targeted toward “farmers in the middle” who could join together using their management skills in meeting the needs of specialized markets like meat raised without the prophylactic use of antibiotics. These three are just the tip of the iceberg and are offered just to get the ball rolling.

The foundational set of policies that will benefit farmers worldwide is the institution of an international program of supply management for the major crops: corn, wheat, soybeans, and perhaps rice. There are three elements to this policy: (1) the establishment of an international humanitarian food reserve and (2) the institution of an acreage reduction program by the top two or three producers of a given crop coupled with (3) a storage program to maintain prices within a predetermined range. With the adoption of the 1996 Farm Bill and its adoption of a radical free-market approach to agricultural programs, prices for the major U.S.-produced commodities fell by as much as half from their 1995-1996 highs. For instance, for a given year ending stocks-to-use ratio, by 1998 the price of corn was $0.45 a bushel lower than in the immediately preceding years; soybeans were $1.09 a bushel lower and cotton was $0.15 a pound lower. While U.S. producers were partially shielded from the impact of these low prices by a combination of fixed payments, emergency payments, and Loan Deficiency Payments (LDPs), farmers in much of the rest of the world had to bear the brunt of lower prices without any protection.

As the oligopoly price leader in the major agricultural commodities, the U.S. non-recourse loan rate set a floor under the market for producers of these commodities in lands around the world. Typically, small operators in an oligopolistic market price their products just under the price leader and quickly clear their markets. When the price floor was removed, the prices fell, taking farmers around the world with them. Counter to the accusations that U.S. subsidies drove U.S. production up and world prices down, it was the decoupling of

U.S. farm payments from the non-recourse loan program that hurt farmers worldwide. The high payments that critics talk about were the result of low prices, not the cause. Again, the cause was the decoupling of U.S. payments from the non-recourse loan program and the elimination of annual acreage reduction programs in the U.S.

An international supply management program, then, is the foundation of a policy regimen that intends on benefiting the majority of farmers in the U.S. and the world. That a large number of farmers around the world produce either one of these major crops or a substitute means that such a program would produce benefits from beyond the circle of large country producers who receive the direct payments for participating in the program. That the bulk of the payments in the U.S. have been directed to a limited number of farmers is a problem that must be addressed. The payments need to be structured in such a way as to encourage a critical mass of farmers to participate in supply management programs while directing the bulk of the benefits to small and medium-sized farmers.

"THAT THE BULK OF THE PAYMENTS IN THE U.S. HAVE BEEN DIRECTED TO A LIMITED NUMBER OF FARMERS IS A PROBLEM THAT MUST BE ADDRESSED."

One of the new and innovative means of addressing the need to manage the supply of storable crops is to put some of that land into the production of dedicated bioenergy crops like switchgrass. Instead of "paying farmers not to farm"—an accusation made about acreage reduction programs in the past—a payment could be provided so that farmers would be able to provide the crop to a utility at a rate competitive with coal or bunker oil. As a perennial crop, switchgrass would help reduce soil erosion while remaining available for conversion back to crop production should the need arise. The payments could be directed in ways that strengthen the "farming as a livelihood strategy." They could also be targeted toward farmers who are within a certain radius of a co-fired electrical generation facility, leaving farmers at a greater distance to continue to grow their storable commodities. Switchgrass production could also be targeted to areas facing serious disease or pest infestation, taking the land out of grain or seed production long enough to significantly reduce the risk. This would be important in nematode infested fields for which a two-year corn-soybean rotation is not sufficient to reduce the nematode numbers. If the subsidies were paid to the utilities instead of the farmers, then it could be argued that the benefits were being socialized to all of society. Utilities, then, could be required to target some of the benefit over and above the aid to switchgrass producers to low-income rate payers.

The second set of policies is those that benefit civic agriculture. In a recent article in Rural Sociology, Lyson and Guptill contrast civic agriculture with commodity agriculture. While commodity agriculture is focused on providing an unending stream of an undifferentiated, standardized commodity to a supply chain that reaches around the globe, civic agriculture is a locally based agricultural production system that is focused on meeting the food needs of a relatively small area and often uses direct sales to distribute its products. "The organizational manifestation of civic agriculture include[s] farmers' markets, community gardens, and community supported agriculture (CSA) and other forms of direct marketing" (Lyson and Guptill, p. 371). Typically, civic agriculture is composed of small to medium-scale farmers who are not able to earn a livelihood in extensive commodity agriculture. Rather than seeking to earn a

small amount of money from each acre of a large operation, civic agriculture farms the land much more intensively, focusing on high value production.

What we are seeing is the reintroduction of a form of agriculture that gave New Jersey its nickname "The Garden State." In the past, truck farmers working on small family-sized plots in New Jersey provided New York City and Philadelphia with much of the agricultural produce they needed. Today, CSAs around various population centers are growing both in terms of the quantity of food produced and in terms of the number of farmers who are turning to civic agriculture as a means of engaging in agriculture as a livelihood option.

The needs of civic agriculture have not been a major concern of the triad of experiment stations, land grant colleges, and agricultural extension services that has been so much a part of commodity agriculture. Directing some of the funds of these agencies could pay rich dividends both in terms of the availability of sustainably produced local agricultural products as well as the opportunity for more small to medium-sized operators to earn a livelihood on their acreage. The August 2004 issue of Glynwood Center's Gleanings identifies a set of needs for farmers engaged in civic agriculture:

- Access to new markets such as local restaurants, retail stores and institutional buyers, where the farmer can receive a fair price for his or her product
- An efficient distribution network that doesn't require the farmer to make the deliveries
- More local facilities such as community kitchens and slaughterhouses where farmers can produce value-added products
- Smarter consumers who understand the value of local food and appreciate that price is only one consideration, and
- Educated politicians and boards who understand how their policies and decisions either support or undermine farming.

Analysts have noted the hollowing out of U.S. agriculture with a few large operations producing the largest quantity of bulk commodities (gross sales above $250,000), a large number of farms with sales under $100,000, and a decreasing number of farms in between, the very operations for whom farming presently is a livelihood strategy. As Lyson and Guptill have reported, most of those who are engaged in civic agriculture are in the group of farmers with annual sales of less than $100,000. The challenge is to first identify the characteristics of this third group or category of agricultural entities and then identify a set of policies for this group that utilizes to advantage the skills and resources of those farm operations that are in the middle range of $100,000 to $250,000.

Some of the skills that we think a family operation of this size offers are management skills, the ability to meet the needs of specialty markets that are too expensive for the large integrators to deal with, and flexibility and adaptability.

As we noted earlier, most observers have considered the supplying of the majority if not all of the management for the farm operation one of the key characteristics of a family farm. In recent years, with contracting and vertical integration taking over the poultry and hog industries and the GMO (Genetically Modified Organism) contracts that farmers have to sign to obtain access to the seed, the key management functions have been removed from the farmstead and placed in a far-off corporate office. With time, we expect to see these trends increase in operations of this sort. For instance, with contracting replacing the auction market in tobacco, we would not be surprised to see the management function move to an off-farm office somewhere.

Recently, we have observed the movement of some operators away from low-cost/low-profit commodity production and into tailoring their production to meet the needs of a well-defined specialty market. For instance, some small-scale African-American farmers in Georgia are going into goat production to meet the needs of a growing Islamic immigrant population that prefers goat meat and desires to have goats ritually slaughtered. To meet the needs of this market requires a degree of participants among farmers because it is larger than any one farmer can fulfill and yet too small for the integrators to worry about. As long as the market size for this particular product remains in this intermediate size, it offers an opportunity for some producers to engage in the "agriculture as a livelihood strategy."

In a similar effort, a group of cattle producers is organizing an effort to provide beef for hospitals that want to serve meat that has not been raised with the prophylactic use of antibiotics. In this case, small operations where the producer is actively involved in providing both the labor and the management are in a much better position to manage the incidence of disease. They achieve this by identifying, isolating, and treating those animals which do have veterinary problems from the rest of the herd—something which large feedlots with tens of thousands of animals in a relatively confined space are unable to do. The challenge is to find the means of organizing a sufficient number of operators who will raise their cattle according to the needs of the end user, in this case a group of hospitals, by maximizing the management skills of the individual operators.

Laura's Lean Beef is one example of how this kind of marketing can work to the benefit of mid-sized farmers. The following from the Laura's Lean Beef website (www.laurasleanbeef.com) gives some insight as to how this all works:

> "Although the company has grown larger and more sophisticated, its priority is to remain true to its original values," [Laura] Freeman said. The family farm is at the heart of its operation. "We realize that it's more expensive for farmers to produce cattle to our specifications, so we pay a premium over market price," she said. "Quality, not quantity, is the key to economic survival for America's family farms."
>
> Although the company has undergone eight logo changes due to brand development, the heart of its marketing effort remains direct communication with its customers. "We started our mailing list in 1985. Today it contains over 250,000 names," Freeman said. The company's customer service representatives communicate with over 3,500 consumers each month..."
>
> "Good communication between the people who produce food and their customers is part of America's farming tradition we think should be preserved," Freeman said.

Another model is Organic Valley Family of Farms™ which began in 1988 as a small, organic cooperative in Wisconsin. Today, Organic Valley® consists of 619 organic farms in eighteen states from California to Maine. They market products from milk to meat to vegetables and have organized and market their products in such a way as enables the producers to reap a greater portion of the retail dollar than general commodity production would. Their website (www.organicvalley.com) strives to make connections with the consumers and is replete with pictures of children with calves, husbands and wives in farm settings, and detailed descriptions of their agricultural practices. All of this combines to re-establish a partnership between the producer and the consumer that has been lost as the commodity chains have become longer and longer. Organic Valley® describes itself as a model for agricultural production and marketing.

Public policies that would provide for additional structures by which these operations could be organized should be looked at. Certainly, publicly funded research and extension should be called upon to provide support to farmers who wish to identify and meet the needs of smaller markets, re-establishing the historic connection between producer and customer.

Extension programs could be built around doing feasibility and logistical studies, developing clearinghouses for producers, market participants, lawyers, accountants, and other professionals, providing educational programs on approaches to ensure consistently high-quality products that meet the expectations of the identified customers, and providing other facilitating services.

Federally sanctioned entities could be developed to handle some of these tasks, especially if legal protection were needed to accomplish required collaboration among producers and other participants. Federal Marketing Boards provide the precedent for such federal structures, although the responsibilities and activities would likely be much different.

Also, the federal government could do more of what it has long done but shape its policies to specifically help mid-sized family farms. Examples include providing ready availability to subsidized credit and expanding publicly financed research that specifically boosts the availability of public domain technology to family farmers. Also, the federal government should enforce existing, and perhaps create new, market concentration, environmental and labor-related laws, especially those that would primarily apply to larger operations.

Willard Cochrane has suggested that mid-sized "agriculture of the middle" family farms should receive a no-strings-attached annual payment of $20,000. This annual payment would be a tangible expression of society's desire to preserve individual family farms and family farms in general.

It is important to remember that the continual increase in productive capacity of U.S. and international agriculture relative to typical demand growth and random weather effects will require programs to help stabilize agricultural markets. Programs that are specifically targeted to civic agriculture and/or "agriculture of the middle" groups could not totally replace programs that provide price and income protection for agriculture as a whole.

DARYLL E. RAY

Dr. Daryll E. Ray is the Blasingame Chair of Excellence in Agricultural Policy, professor of agricultural economics and director of the Agricultural Policy Analysis Center (APAC) at the University of Tennessee. Since coming to the University of Tennessee in 1991, he has established and developed APAC into a center that is recognized as a premier source of independent, data-based policy analyses. Daryll grew up on a diversified family farm in Iowa and received his B.S. in 1965 and his Ph.D. in economics in 1971 from Iowa State University.

Dr. Ray has been especially effective in translating and interpreting agricultural policy research for public consumption and benefit. A portion of his efforts have been aimed directly at government decision makers including Congressional committees and Congressional and Executive Branch staff through testimony and briefings presented in Washington. He writes a weekly column on agricultural policy that is published in numerous farm publications and reaches thousands of people including interested farmers, people at government agencies, NGOs, farm and commodity organizations, academic and credit institutions, and the media.

Necessary Policy Changes to Improve Food Security

Katherine Ozer

To improve food security, farm, food, and trade policy need to be changed at every level. Policy, whether on the local, state, federal, or international level, has a major influence on who farms, how they farm, who accesses affordable high quality food, and the viability of rural communities. Policy shapes who profits from the farm and food system and who loses.

The National Family Farm Coalition (NFFC) advocates for a vision of food sovereignty—a goal that encompasses food security yet is even broader. Food sovereignty is each nation's right to negotiate fair trade agreements that respect each country's needs and traditions for food security, conservation of natural resources, and fair distribution of economic opportunity. NFFC is part of an international farmer movement called Via Campesina that has just launched a four-year global campaign to promote food sovereignty.

A major aspect of food sovereignty, as articulated by Via Campesina, is to "prioritize local agricultural production in order to feed the people [and provide] access of peasants and landless people to land, water, seeds, and credit. Hence the need for land reform, for fighting against GMOs [Genetically Modified Organisms], for free access to seeds, and for safeguarding water as a public good to be sustainably distributed."[1]

The push to re-establish farm and trade policy that enables every country to maintain its own farm and food programs is at the center of the domestic and international debate. Hope that new ground is being broken in this debate is fueled by new discussions launched in international arenas, expanded research, and increased media attention.

Achieving food sovereignty requires policies enabling farmers to provide food for themselves and their communities. It would provide fair prices for all farmers through the sale of their products in a market—whether it is local, regional, schools/institutions, or commodity—so farmers aren't forced to depend on subsidy payments that are sometimes available but never an adequate replacement for fair prices. This approach protects the economy and the environment while restoring rural vitality and promoting access to food.

Today, however, U.S. farm commodity policy (as reinforced by the 2002 Farm Bill) threatens the sustainability of the farm and food system. The current Farm Bill continues and expands on the failed policies started in the 1985 Farm Bill, where farm prices have been allowed to drop way below the cost of production to supposedly build export markets. These policies threaten food security. The pressure farmers feel to maximize production in order to meet fixed costs amidst such low prices strains the environment and the infrastructure of our communities. Low prices are being exported by both international trade

[1] *Via Campesina is an international movement which coordinates peasant organizations of small and middle-scale producers, agricultural workers, rural women, and indigenous communities from Asia, Africa, America, and Europe. www.viacampesina.org*

policies and by the dumping of these low-priced commodities on the export market which directly threatens the food security of farmers.

According to the September 2003 report, *Re-thinking U.S. Agricultural Policy: Changing Course to Secure Farmer Livelihoods Worldwide* by Darryl Ray at the University of Tennessee Agricultural Policy Analysis Center, "Despite large increases in taxpayer-provided farm payments, net farm income declined 16.5 percent between 1996 and 2001." While some farmers receive a share of government farm payments (projected in the 2002 Farm Bill to be $180 billion over ten years), these subsidies do not adequately compensate for losses incurred from low commodity prices resulting from no price floor in the 2002 Farm Bill.

Disastrous weather conditions, not good policy, made commodity prices spike over the past year. Record high increases in input costs (fuel, equipment, supplies) mean little to no increase in net farm income. This lack of income, coupled with inadequate health care and insurance, often spells the end to America's traditional family farming operations. Many farm families that do survive work multiple off-farm jobs just to make ends meet. This creates an unsustainable situation for the farm, the family, and the community.

The 2002 Agriculture Census documents this trend: medium-sized farms (gross sales between $10,000 and $250,000) whose owners strive to earn most of their income from farming experienced the greatest losses, while the largest farms (gross sales over $500,000) and the smallest (gross sales between $1-$10,000) increased.

Agribusiness corporations, joined by most commodity organizations, wield their power to ensure that our nation's farm programs, trade agreements, and antitrust laws guarantee an abundance of cheap commodities for food processors. On December 8, 2004, the U.S. Supreme Court heard a case that will determine the outcome of the current "checkoff" programs—an outcome that will hopefully further expose most commodity groups' agenda. Four years lapsed since farmers won the referendum against the Pork Checkoff that the Bush Administration then overturned in January 2001. For the past four years, courts forced farmers to defend their victory.

Government policies that promote cheap grain for animal feed give an advantage to livestock factories at the expense of diversified family farmers who raise their own grain, maintain crop rotations, and recycle animal waste as crop nutrients. The rapid growth of corporate livestock factories is one of the most visible impacts of an industrialized food production system that promotes profits for the companies (like Smithfield, Premium Standards, and Dean Foods) while externalizing the human, animal, and environmental costs. This is happening in our rural communities and in communities around the world. It is destroying the fabric of our society.

Rural communities here and around the world feel the disastrous impacts of the U.S.'s failed farm policy. Low commodity prices are spread around the world by international trade imposed on other countries by "free trade" agreements. These agreements, compounded by a U.S. led "food aid" policy, further threaten food security and food sovereignty for millions of farmers, peasants, and agrarian-based economies around the world. Companies like Monsanto and Syngenta exert monopoly control over patents and seeds that threatens biodiversity and the food supply.

The increasing concentration in the food industry (from processing to production to marketing to retail) demands rigorous antitrust action from the U.S. Justice Department. Many groups are demanding a moratorium on mergers and acquisitions in agribusiness, transportation, food processing, manufacturing, and retail companies to stem the monopolistic

consolidation occurring in these arenas today. The concentration in the dairy industry and control by Dairy Farmers of America and Dean Foods triggered a Department of Justice investigation which the *Chicago Tribune* featured in a front-page story in September 2004.

NFFC believes government policy should promote a diversified agriculture production system—one that ensures a sustainable and adequate supply of safe food at affordable prices. It should internalize the real costs of production. It should promote food security and a nation's food sovereignty. We need to strive for policy solutions that address the needs of farmers and low-income consumers simultaneously. We must refute and unpack the myths perpetuated by corporate agribusiness that higher farm prices translate into higher consumer prices while processors and corporations continue to reap record profits. We must expose the lie that biotechnology will feed the hungry.

Over the past twenty years, there are examples where good federal policy emerged in response to grassroots organizing, pressure, and litigation. In 1986, groups working with farm families formed the National Family Farm Coalition amidst the deepest farm crisis since the 1930s. They came together to change the unfair farm credit policies driving farmers off their land and in support of new price policy that established support prices at cost of production. A class action lawsuit against the U.S. Department of Agriculture's (USDA) credit program, then known as Farmers Home Administration, halted foreclosures for over 70,000 farm families and provided the impetus for legislative changes.

Voices of farmers are not being heard either through official channels, advisory committees, or by political appointees. Furthermore, there is no real commitment to ensure access to existing programs, whether credit/financing or eligibility for USDA programs. Today, farmers continue to fight for equity and social justice from the agency that is supposed to be providing services to family farmers and rural communities: the U.S. Department of Agriculture. There are class action lawsuits pending before the courts to redress ongoing discriminatory practices against Hispanic, Native American, and women farmers. The struggle continues for farmers to receive fair settlements from the African-American farmer case. Legislative pressure is mounting to adopt changes to credit programs to better meet the needs of all limited resource farmers, including minority farmers.

In late 2001 and early 2002, largely due to coordinated grassroots efforts, the Senate passed the Packer Ban and Contract Reform and had extensive debate on the Environmental Quality Incentive Program (EQIP). The 2002 Farm Bill includes some significant victories: the establishment of the Conservation Security Program (CSP), the doubling of the annual funding (from $2.5 to $5 million) for the Community Food Projects, transparency provisions within USDA to increase access to data and address civil rights issues, mandatory Country of Origin Labeling (COOL), and increased funding for Rural Development programs. The fight to get these programs implemented properly and/or funded is a major challenge. The shift from a budget surplus in 2002 to a massive deficit in 2004 enables the White House and Republican leadership to use the budget excuse to decimate many of these new programs that symbolized major wins for the Democratic leadership during the Farm Bill debate.

The Senate floor debate on the 2002 Farm Bill exposed the deep policy divisions that exist within the agricultural community. Those organizations that represent family farmers and sustainable agriculture were very clear in their support of mandatory COOL, the Packer Ban and Captive Supply, or more realistic amounts for the EQIP Program. The American Farm Bureau Federation and the commodity groups led the fight to allow for federal funds of up to

$450,000 (originally it was even more) to support the expansion of corporate livestock operations. They took a small yet significant program (EQIP) that needed more funding and transformed it into a federally financed payment that shifts responsibility from the companies who should be bearing the cost to the taxpayer.

In the final days of the Farm Bill debate, some environmental organizations joined alongside the commodity groups because their priority focus was on cleanup of livestock waste without any real concern for the type or size of the operations receiving a federal subsidy. This is a clear case where small to moderate-sized farms are disadvantaged by a government policy.

The Food from Family Farms Act: Policy for a Change

The National Family Farm Coalition identified essential farm policy changes and has developed the "Food from Family Farms Act" (FFFA). It restores a fundamental role for government in establishing farm and food policy through price supports, in contrast to the current role of subsidy payments. If corporations paid a fair price for commodities, thereby eliminating the need for farm subsidies, billions in federal funds could be available for important programs such as the Conservation Security Program, sustainable agriculture grants, increased credit programs, outreach, Farm to Cafeteria, and new marketing initiatives.

The FFFA would ensure farmers' income from fair prices paid by commodity buyers (mainly multinational grain processors), not from taxpayer-supported payments. It would also re-establish farm policy mechanisms such as a price floor (a support price level at a farmer's cost of production), food security reserves, and conservation set-asides. An international commodity reserve and commodity agreements would also be established.

The FFFA would enable a family farm structure of agriculture to thrive and would promote food quality and safety, diversity of production, social and economic opportunities, and land, water, and biodiversity conservation.

Working Together in 2003/2004

In September 2003, thirty national organizations including Farm Aid, NFFC, Oxfam-America, and the National Catholic Rural Life Conference issued "A Declaration for a New Direction for American Agriculture and Agriculture Trade" (www.nffc.net) prior to the World Trade Organization (WTO) meeting in Cancun, Mexico. This declaration linked support for domestic policies that provide family farmers with fair prices, the right of farm laborers to fair wages, contracts, and safe working conditions, and it concluded with a call to U.S. Trade Representative Ambassador Zoellick to "work towards global trade agreements that reflect the basic values of fairness, independence, democracy, and social and economic justice."

In 2004, many organizations joined with the Community Food Security Coalition to support the establishment of a Farm to Cafeteria Program in the reauthorization of the Child Nutrition programs. It built on the success of pilot Farm to School/Cafeteria projects established around the country—some through USDA/Food and Nutrition Services and some with state and private funding. Farm to Cafeteria was enacted in June 2004 but to become a reality, it must receive funding through the appropriations process in Congress.

Farm to Cafeteria is a policy that addresses food security in multiple ways. It helps create a new, more stable market for farmers in the region by enabling a non-profit organization or the school to apply for a grant that reduces barriers to sourcing food from farmers. These barriers include infrastructure costs, the differential in price/cost, or re-establishing kitchen

facilities in the school. The legislative intent is clearly to link farmers within the region to potential markets, but its implementation needs to be watched closely. It is meant to be much more than delivering vegetables to school cafeterias or to a school district, regardless of their origin. While this approach could increase the nutritional value of the school lunch, a fully implemented Farm to Cafeteria program (or expanded in the next Farm Bill) has the potential to address a range of food security goals. This includes an educational component that reaches school-age children, making the connection between the school gardens they grow and the food they eat in the cafeteria. Creating programs and infrastructure with government support is a step towards meeting the goals of both family farmers and low-income consumers.

On an international policy level, NFFC joined with farmers in Europe represented through the Coordination Paysanne Europeanne (CPE) in developing a joint analysis of the problems and solutions. There is an increase on an international level in understanding that cheap grain exports/imports act as the catalyst for the expansion of a livestock industry that is devastating diversified family farming operations around the world. NFFC and CPE issued a joint statement calling on the needs for these reforms. It read: "We, CPE and NFFC, declare that the EU needs a new Common Agricultural Policy and the U.S. needs a new Farm Bill based on food sovereignty and sustainable farming..."

These joint strategies represent the building blocks of coordinated campaigns promoting food sovereignty. They also strengthen the role of family farmers and peasants throughout the world in restoring food security.

Take Action to Support Fair Implementation of the 2002 Farm Bill:

- Maintain the Conservation Security Program as an entitlement and ensure its implementation in a way that works for family farmers. (National Campaign for Sustainable Agriculture: (845) 361-5201/ campaign@sustainableagriculture.net)
- Hold USDA accountable in providing the new Assistant Secretary for Civil Rights the resources and authority to carry out the job and to allow fair access to credit and farm programs, reversing years of discrimination at USDA. (NFFC: (800) 639-3276/ nffc@nffc.net)
- Support mandatory Country of Origin Labeling (COOL), established in the 2002 Farm Bill yet thwarted by USDA and Congress in 2003 and 2004. (National Farmers Union: (202) 554-1600/ kziegler@nfudc.org.)
- Support legislation to restore integrity to the Environmental Quality Incentive Program (EQIP) by limiting EQIP so as not to fuel further corporate expansion of factory livestock operations. (Missouri Rural Crisis Center: (573) 449-1336/ Bryce@morural.org)

Take Action to Support New Policies and Programs:

- Urge Members of Congress to co-sponsor the Packer Ban and Captive Supply legislation. (Western Organization of Resource Councils: (406) 252-9672/ www.worc.org)
- Secure funding for a new program in the 2004 Child Nutrition Reauthorization that enables school cafeterias to link up with farmers to improve school meals. (Community Food Security Coalition: (202) 543-8602/ www.foodsecurity.org.)

- Support the Food from Family Farms Act that establishes support prices at cost of production plus a profit and establishes reserves to ensure food security and conservation set-asides to meet supply management goals. (NFFC: (800) 639-3276/ nffc@nffc.net)
- Support legislation to protect farmers from lawsuits by making biotechnology companies liable for genetic contamination and by requiring the labeling of all genetically engineered food products. (Farmer to Farmer Campaign on Genetic Engineering: (877) 968-3276/ Bwenzel2@aol.com)
- Support the Via Campesina and NFFC campaign to promote food sovereignty as a basis for domestic farm and food policy and trade policy. (NFFC: 800-639-3276/ nffc@nffc.net)

KATHERINE OZER

Kathy Ozer has been the Executive Director of NFFC, a coalition of family farm and rural advocacy organizations since 1993. Kathy represents NFFC on national boards and steering committees, including the Citizens Trade Campaign, National Campaign for Sustainable Agriculture, Community Food Security Coalition, and Jobs with Justice. She has worked on trade issues since 1990 both in work to oppose the congressional granting of fast-track, was part of a delegation of women Members of Congress and farm and trade organizational representatives in 1994, has represented NFFC at tri-national meetings on the impact of NAFTA in Mexico and Canada, and has worked with NFFC leaders in their role at UN events; CSD-8 in 2000, the January 2002 Prep-Com for WSSD, the World Food Summit in Rome, and events leading up to the WSSD in August 2002. In 2003, Kathy played an active role in the NGO events surrounding the WTO meeting in Cancun, Mexico and the FTAA in Miami, Florida. She received her B.A. in economics and Political Science from the University of Massachusetts in Amherst, Massachusetts.

Other Presenters

KATHLEEN E. DICKHUT

Ms. Dickhut is an Assistant Commissioner at the Chicago Department of Planning and Development. Her current projects include: developing neighborhood and schools parks with the Chicago Public Schools and the Chicago Park District, implementing the Chicago River plan, preserving wetlands and natural areas throughout the heavily industrial south side, overseeing the open space impact fee fund, creating the Chicago Nature and Wildlife Plan, and managing Chicago Organic, an initiative to define Chicago's role in the local and regional food system. Ms. Dickhut has a Bachelor's Degree in psychology and anthropology from St. Norbert College and a Master's of Science in landscape architecture from the University of Wisconsin, Madison. Past Chicago experiences include Director of Urban Greening for Openlands Project, a regional, non-profit land conservation organization, Project Manager for the 1,200-acre Lincoln Park plan, and Director of NeighborSpace, a non-profit organization that purchases and holds community managed open spaces. Ms. Dickhut was part of the consultant team that developed Chicago's comprehensive open space development plan.

ARTHUR GETZ-ESCUDERO

Arthur Getz-Escudero has engaged partners in Latin America, Asia, and Africa on policy analysis, advocacy, and facilitation of multi-stakeholder learning and action over the past two decades. Recent work at the regional level has focused on civil society network development in Africa, with the Forum on African Civil Society (FACS). Recent thematic work has included the human right to food with communities and researchers engaged in sustainable agriculture and biodiversity conservation. Consultation and services have been provided for the Ford Foundation and the Humane Society of the US on civil society roles in global policy arenas. Much of this work has been in conjunction with the NGO network International Partners for Sustainable Agriculture (IPSA).

Formerly with the World Resources Institute's (WRI) program on Biological Resources, Arthur coordinated projects on sustainable agriculture and food security issues, agrobiodiversity and natural resources management, and implementation of the Biosafety Protocol of the CBD.

Arthur has international farming experience in ecological agriculture, including an extended apprenticeship on a traditional family farm in Japan, pioneered action research on 'teikei' consumer-producer partnerships, and led cross-cultural exchanges and tours between farmer groups, scientists, and policy-makers.

HEIDI HANSON

HEIDI HANSON of WARNER HANSON TELEVISION is the Producer and Co-Creator of the award-winning national PBS Television series, Chefs A' Field. Chefs A' Field features the nation's top chefs and their relationships with local farmers and fisherman. The series was conceived as a means to entertain viewers while offering lessons on sustainable agriculture and the environment and has been praised by the likes of Julia Child for its "refreshing" focus. The series is currently in production on season two. Heidi is a member of The American Institute of Wine & Food and is the 2004 Chair of Days of Taste, a national volunteer program that connects elementary school children with farmers and chefs as an educational tool. Heidi has been a guest lecturer for L'Academie de Cuisine cooking school, various culinary events and conferences, as well as many conferences on the issue of Food Security, Farmland Preservation, and Sustainable Agriculture. Heidi is an active member of The James Beard Foundation, The American Institute of Wine & Food, and the National Campaign for Sustainable Agriculture.

KATHY LAWRENCE

Kathy provides overall leadership, management and vision for the National Campaign for Sustainable Agriculture, a network of diverse groups whose mission is to shape national policies to foster a sustainable food and agricultural system—one that is economically viable, environmentally sound, socially just, and humane. Prior to joining the National Campaign in October 2000, Kathy was founder and Executive Director of Just Food, a New York City-based non-profit dedicated to creating a just and sustainable food system in the New York

region. Her achievements at Just Food include initiating the Community Supported Agriculture (CSA) in NYC program and The City Farms urban agriculture and food access program. Prior to founding Just Food in 1995, Kathy coordinated public information, outreach and education for both the New York and Northeast Sustainable Agriculture Working Groups (SAWGs) and gathered considerable experience in citizen advocacy at the United Nations on sustainable agriculture and food security issues. Kathy's first career was in trade with the People's Republic of China. She has a Bachelor's Degree in East Asian Languages and Cultures from the University of Kansas, and a Master's of International Affairs from Columbia University, where she majored in Economic and Political Development.

TRISTAN READER

Tristan Reader is Co-Founder and Co-Director of Tohono O'odham Community Action (TOCA). Raised in Arizona he was educated at Swarthmore College and Harvard University. He has worked as a community organizer in a variety of settings ranging from inner-city Boston to rural Iowa. In 1995, he moved to the Tohono O'odham Nation where he met Terrol Dew Johnson, TOCA's other Co-Founder and Co-Director. Recognizing both the extreme need and tremendous assets of the Tohono O'odham community, they joined with several community members to develop programs aimed at creating a healthy, sustainable, - and culturally vital Tohono O'odham community. TOCA works in areas as diverse as cultural revitalization, food system redevelopment, a basketry marketing cooperative, youth/elder mentoring and health promotion. In 2002, he and Terrol Johnson were recipients of the Ford Foundation's Leadership for a Changing World Award recognizing them as among the top community leadership teams in the U.S.

RICARDO SALVADOR

Dr. Ricardo Salvador is Associate Professor of Agronomy and Sustainable Agriculture at Iowa State University. Dr. Salvador is an expert in maize physiology with a special interest in the history and sustainability of human societies and their modes of subsistence. His research integrates systems analysis of crop productivity with assessments of the long-term viability of industrial agricultural practices. He teaches crop physiology, world food issues and sustainable agriculture. Currently, he is coordinator of the Agronomy Department's Global Agricultural Science and Policy Initiative, an endowed activity with the goal of providing an international arena to analyze critical emerging agricultural issues and their interrelationships with society, natural resources, and scientific research. Ricardo is also Director of Graduate Education for the Graduate Program in Sustainable Agriculture, Interim Faculty Director of the University Honors Program, and a consultant on Food and Society for the W. K. Kellogg Foundation.

Founded in 1995, **Glynwood Center** works with communities to address change in ways that conserve local culture and natural resources, while strengthening economic well-being. It does this by gathering, developing, testing and sharing ideas and initiatives from the United States and abroad. Glynwood has worked with more than 100 communities in the United States and abroad through the Countryside Exchange program and has provided training and professional development for hundreds of local leaders, heritage area professionals, and others. Through its multi-faceted Agricultural Initiative, Glynwood is working at both the regional and national level to expand public understanding of the importance of regional agriculture and to encourage individuals and organizations to take action at the community level to support their local and regional farmers. For more information, see *www.glynwood.org.*

The **Airlie Foundation** and its Conference Center operate in tandem to develop and sponsor educational, environmental, and cultural programs; hosting over 600 non-profit, government and private sector groups a year. In 1998 the Foundation partnered with the Humane Society to create the Local Food Project, a 3/4 acre organic culinary garden on the Airlie campus. Today, the garden provides some 4,000 lbs and nearly 50 varieties of vegetables annually to the Center's kitchen. The Local Food Project serves as a model local food system to the many guests that visit the Center and promotes sustainable food production methods through its seminars, tours, and conferences. To learn more about Airlie visit *www.airlie.org* and *www.airlie.com*.

AIRLIE FOUNDATION

LEOPOLD CENTER

Through its research and education programs, The **Leopold Center**, based in Ames, Iowa, supports the development of profitable farming systems that conserve natural resources. Center funding comes from state appropriations and from fees on nitrogen fertilizer and pesticides, as established by the 1987 Iowa Groundwater Protection Act. More information about The Leopold Center is available at *www.leopold.iastate.edu*.

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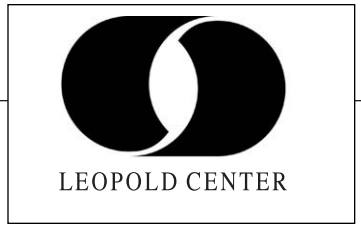

The Leopold Center has awarded more than 300 competitive grants totaling more than $10 million. There are three research initiatives; each is responsible for its own projects and educational events.

Marketing and Food Systems researchs and develops marketing systems that enable farmers to produce and retain more value on the farm, based on production systems that contribute to environmental stewardship and community revitalization.
Recent projects include:

- Investigating supply chain options for bio-based businesses
- Assessing local food capacity in north central Iowa: nutritional need, economic capacity
- Supporting direct meat marketing in Iowa

Ecology supports research and development of ecologically friendly systems that are more resilient and less costly to farmers, communities and the environment. This includes identifying how farming practices can use free ecosystem services, enhance biodiversity, and use natural processes as models to increase agricultural productivity.
Recent projects include:

- Leveraging funds to support work, at the landscape level, that would lead to re-integration of livestock and crops, grass-based systems, improved water management, and multifunctional landscapes
- Establishing a field school for weed ecology and management
- Quantifying the role of riparian management to control non-point source pollution of pasture and cropland systems

Policy supports options that foster sustainable agriculture. This includes policies to help beginning farmers establish ecologically sound and profitable farming and marketing operations, that reward farmers for producing public goods such as ecologically restored landscapes, and that modify regulations which sometimes put locally locally-owned micro-enterprises at a competitive disadvantage. Recent projects include:

- Assessing the impact of USDA's National Organic Program on organic farms in Iowa
- Evaluating implementation of the Conservation Security Program
- Building a platform for performance-based stewardship payments

The Center's mission includes an educational component of informing the agricultural community and the general public about its research findings. The Center collaborates with ISU Extension and other university, state, and local organizations to communicate research findings. It also supports conferences, seminars, and special events related to the three research initiatives.

GLYNWOOD CENTER

Glynwood's Agricultural Initiative encompasses work at the community and regional levels. Examples include:

KEEP FARMING

Glynwood Center has developed a new program designed to help communities identify the many ways in which agriculture contributes to their wellbeing, generate broader public support for local farmers, and develop action strategies tailored to local resources and situations.

Through the Keep Farming program, community residents use four assessment tools to gain a deeper understanding of the ways in which agriculture contributes to the community's economy, environmental quality and character as well as the potential for a stronger local food system. Glynwood staff then work with community residents to review tools and techniques available to encourage farmers to stay on their land and develop an action strategy tailored to the community's needs and opportunities. The overall process is guided by a committee that includes farmers and other community leaders.

THE STATE OF AGRICULTURE IN THE HUDSON RIVER VALLEY

For the past several years, Glynwood has been actively working to strengthen the regional food system in its home region, the Hudson River Valley. This work began with a series of convenings that drew attention to the concept and analyzed the current state of the region's food system. Among the actions that Glynwood has undertaken in response, is the first analysis of agricultural data focused on the Hudson Valley. Without regional data, it was not possible for local leaders to make the case for the investment and other action needed to insure that agriculture will be part of the Valley's future, not just a remnant of its past.

The analysis, completed in 2004, revealed that over 17% of the land in the Hudson Valley—almost 1,000 square miles—remains in agricultural use in 4,000 farms. Most of the farms are relatively small—the median size is 87 acres—and only 20% of them have sales of $50,000 or more. There is a trend, as one farmer put it, from larger dairy farms to "horses, hay and houses." At the same time, there is an important counter-trend of farms being supported by direct sales to consumers, which increased in value by almost 70%—to $15 million—from 1997 to 2002.

This analysis and discussions with more than one hundred farmers and other Valley residents underscored the importance of expanding markets for regional producers and recreating the marketing, processing and distribution infrastructure needed to enhance their efficiency and profitability.

INCREASING THE MARKET FOR REGIONAL PRODUCTS

To strengthen the regional food system, we are exploring new ways of connecting regional farmers to metropolitan markets. For example, as part of our effort to encourage production of pastured beef, we helped a regional processing facility specializing in pastured and grass based beef find a major outlet for its hamburger (the hardest cut to market at a quality price.) We are also examining the challenges and opportunities involved in connecting regional farmers to various institutional purchasers.

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