

Environmental Impacts of our Food System Panel

Food Security Summit 2008

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Marcus Kerske- Gardens of Babylon

Kimberlie Cole- West Wind Farms

Dave Keiser- Cumberland Region Tomorrow

Our agricultural system greatly impacts and is impacted by our environment. What are the local and global implications of an industrialized food system and how can our consumption favor a more sustainable model? We will explore both traditional and forward-thinking practices for promoting sustainable agricultural systems that promote wildlife habitat, water filtration, and healthy soils, in addition to many more ecosystem services. How is Tennessee agriculture impacted by broader environmental themes, from global climate change, drought, and the decline of bee population? How can we support a more sustainable future by lowering our “food miles” and finding farmers and value-added producers who are employing principles of sustainable agriculture? How can we protect the working farms surrounding Middle Tennessee, preserve farmland, and strengthen the interconnectivity between urban and rural, people and land, and food and community? Come explore these questions with our panel!

Marcus Kerske

Marcus stressed the importance of rebuilding and restoring the soil naturally. The soil food web is a network of living and working microorganisms living in symbiosis, a critical component of breaking down matter and building healthy soil. A healthy soil, whether on the farm or in your yard, is made up of beneficial bacteria, fungi, and other organisms that work together to keep disease and pests under control and protect the health of plants. Without a healthy soil base, conventional farmers often turn to synthetic fertilizers to add nutrients to the plants via chemical application when they are lacking or have been removed from the root zone. However, since synthetic fertilizers are petroleum based - requiring a tremendous amount of energy to produce - and can leech away from where the plants utilize them and into our waterways, they have the potential to create a detrimental impact on our local and regional environment. Globally, the nitrogen fertilizers can impact global warming, as nitrous oxide gassing into atmosphere releases 300 times more warming than CO₂.

Healthy soil can also help global warming; since soil is a carbon sink it can capture and hold onto carbon instead of CO₂ entering the atmosphere. As plant, compost, and other organic matter are incorporated into the soil, soil microorganisms break down the material and transform it into partially degraded organic material, high in carbon content, called humus. With proper stewardship and management, the level of organic matter and humus, and thus the carbon level, of the soil can increase with time, leading not only to less carbon dioxide released but reduced need for fewer fertilizers and pesticides. Compost and compost teas are increasingly recognized for the array of microbial life they

bring to the soil and the function of the soil food web in aerating and restoring the soil. By finding and supporting the local farmers who employ these sustainable practices we can help to create and sustain a vibrant ecosystem for our region, in the soil and a healthy globe.

Kimberlie Cole

Kimberlie, an organic livestock farmer on the Cumberland Plateau, began farming due to her feeling of responsibility to act to influence the source of our food. The consolidation of our food supply is increasing two major threats to our future sustainability, the dependence on monoculture, or one crop, production and the decrease in genetic diversity of livestock breeds as industrial farms rely upon only a few specialized types of livestock.

Both of these issues highlights the central importance of a diverse system in sustainable agriculture, as genetic diversity fosters resistance to disease and pests, rather than a single crop variety or a few species which are more susceptible to being wiped out in entirety by a single infestation or disease incident. Heirloom varieties of plants and heritage animals were bred over time to develop certain traits or characteristics that allow them to adapt and thrive in local conditions, often withstanding disease or harsh environmental conditions. Conversely, industrial agriculture systems will typically use a single or few main species bred not for appropriateness to space but rather to produce higher quantities of milk or eggs, ability add weight quickly or certain produce types of meat under confined conditions. Heirloom plants and heritage livestock breeds carry a pool of critical genetic resources which once extinct are lost forever and can't be used to breed new traits into existing varieties or breeds. While there are many reasons to preserve these valuable traits within species so future breeds can endure harsh conditions and new traits can be found, domestic livestock breeds are disappearing at 5% annually worldwide, 6 breeds per month, and within the past 15 years, 190 breeds of farm animals have gone extinct worldwide, with an additional 1,500 at risk of becoming extinct. In the past five years alone, 60 breeds of cattle, goats, pigs, horses and poultry have become extinct. The industrialization of our food supply and the selection of animals for their ability to produce uniformly in confined livestock facilities leads to a system where 99% of all turkeys raised in the U.S. are Broad-Breasted Whites, a single turkey breed to produce a meaty breast. In the world 90% of turkey production comes from just three breeding stocks. In the US and across the world, there is a great need to introduce more diversity into what we produce.

Genetic engineering has been grown exponentially and now use used across 22% of US cropland, and has inundated every portion of our food supply. The technology, which is not a baby anymore, poses questions not only of increased monoculture and technological dependence rather than creating diverse farming systems, but also the risk of genetic drift and creation of herbicide and insecticide resistant insects.

Our agricultural growing and production practices have a great impact on the environment. Soil erosion is a huge issue across the world, with Tennessee often leading the United States in amount of land washing away due to soil erosion. In 1997, 3.07

billion tons of soil eroded in US land, the equivalent of soil packed in freight cars in a train that wrapped around the world seven times. This kind of environmental degradation carried an estimated social cost of 29.7 billion dollars. Federal programs such as the USDA Conservation Reserve Program are making difference in Tennessee by offering payments to farmers for planting permanent vegetation on highly erodible farmland and reducing erosion.

High pesticide and chemical fertilizer use across the country is a major source of pollution; in 2000 an estimated 17% of Tennessee lakes were too polluted to swim or fish. Confinement livestock operations concentrate animal manure as a waste rather than allowing beneficial use of it as composted manure. 37% of Tennessee's water pollution is due to agriculture.

A life cycle analysis determined that in the US, energy that was consumed by the manufacturing industry in producing our food produced the total energy that was provided by the food. This was due to the additional processing, packaging, and transporting that food. One major impact consumers can have is to buy fresh, buy local, buy minimally processed products and staples rather than ready made, processed products. The Union of Concerned Scientists named food as one of the most environmentally harmful consumer activities, with meat and poultry from confinement operations named one of worst for the environment. Good food choices can make a greater impact than any other household choice for the promotion of a sustainable environment.

Dave Keiser

Dave shared a personal experience growing up as a 5th generation farmer from Nebraska. His family farm has ranged from producing potatoes, dairy, hogs, cattle, to more recently corn and soybeans. In a region with increasing industrial farming, they are the only surviving small family farm prior to the depression in the area. Loss of small farms can create a wake of environmental, social and economic change in a community. Environmental impacts include loss of tree buffers, hedge rows, wildlife habitat, and a move to large industrial farms dependent on chemical inputs. Small farm operators tend to make local purchases and make use of local tradespersons and services. They contribute to the critical mass necessary to maintain rural community businesses and services. Small farms provide green space. Small farms can be more environmentally friendly because they do not concentrate large quantities of waste or chemicals in one place. Some small farms (e.g. livestock farms and organic farms) are also more likely to use less intensive methods, such as grazing or reduced levels of pesticides and nutrients.

Dave talked about his work with Cumberland Region Tomorrow, which was created in 2000 to address quality growth in the Middle Tennessee region and to keep Nashville from turning into the next Atlanta. A 20 year modeling by the group in 2003 compared current trends in population, development, land consumption, leapfrog development, sprawl, housing, and congestion in our region with alternative cases utilizing smart growth techniques, planning around city centers, smaller housing lots, funding for mass

transit and other alternative modes of transport, and appropriate zoning. The group projected that if we stayed on the current track of unplanned growth, we will have taken 365,000 acres of land to be developed for low density sprawl. If we follow a smart growth model and still follow estimated population growth, the region could instead consume 90,000 acres. The key to promoting the second choice is clear and appropriate land use planning, appropriate zoning, incentives to keep rural landscapes and working farms, and working together for sustainable regional growth that protects farmland and invests in urban economic development.

Sprawl has a great impact on food security and the ability of farmers to continue farming in our region. Across the US, many of the calories for human consumption are produced around urbanized and suburbanized areas, the farms most susceptible to urban sprawl and development. The more that land is developed without protection for working farmlands, the more that we hand over our food production to large industrial farms further away from our cities.

Ethanol and the rapid increase in the use of corn for biofuel is already having detrimental impacts not only on the environment but also on the price of feed for livestock, which will impact the price of meat in the store. There is a need for more research on commodity crops and appropriate feedstocks to produce fuel and oil crops besides corn.

There are many resources in our toolbox for smart growth, from purchase of development rights, creation of right to farm laws, and improved zoning and incentives to preserve working farmland. These policy changes can help keep more rural areas vibrant and more small farms in business. Maintaining working farms is an issue of consumers making appropriate food choices and supporting local farms whenever possible. Eating local foods in season not only tastes better but can help make a positive impact in your community.