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Sustainability is a Cornerstone of the United States' Approach to Agriculture

by

David Kostelancik, Deputy Chief of Mission U.S. Embassy Budapest

In the United States, “sustainability” is a cornerstone of our approach to agriculture. Our goal has always been to maintain, improve, and preserve natural resources for future generations, while enhancing the quality of life for farmers and society as a whole.

Farmers, ranchers, and foresters in the United States have implemented sustainable agriculture practices actively since the Dust Bowl in the 1930s, when unsustainable farming practices combined with a long drought caused major economic, social, and environmental devastation in our Great Plains.

The outcome was that the U.S. Government stepped in to create soil conservation programs, resettle displaced farm families, and seek new ways to balance agricultural productivity goals with environmental stewardship and conservation.

For 80 years, U.S. Government agencies have worked with agricultural producers to make conservation improvements to their farms, ranches, and forests. These improvements help clean and conserve water, boost soil quality, and restore habitat, and also make our rural economies and agricultural operations more resilient.

But even before the Dust Bowl, the U.S. Government developed many regulations that promote sustainable practices – for example, the **Lacey Act** combats trafficking in “illegal” wildlife, fish, and plants, including wood products. It was first enacted in 1900 to combat the impact of poaching, interstate shipment of unlawfully killed game, and killing of birds for feather trade.

The Act was amended in 2008 to include products, including timber, derived from illegally harvested plants. The Act also created new declaration requirements for importing wood products to reduce illegal logging and other illegal plant trade globally while expanding worldwide conservation and to increase the value of legal wood exports.

The American Forest & Paper Association estimates that illegal logging depresses world timber prices by between 7-16%, which results in losses to U.S. firms of at least \$460 million annually. In many countries, these losses are borne by poor communities that depend on the forests for their livelihoods.

Pesticide use is another area that comes into question when discussing sustainability; U.S. laws began to regulate pesticides as long ago as 1910. The basic law in this area, the **Federal Insecticide, Fungicide, and Rodenticide Act** (FIFRA), was first enacted in 1947, but dramatically revised in 1972 to reflect new information on chemical and environmental risk assessment, and significantly updated in 1996 under the Food Quality Protection Act to assure the health of infants and children.

The Worker Protection Standard (WPS) is a regulation issued under the authority of the FIFRA to protect agricultural workers from the effects of exposure to pesticides.

Protecting water, a key natural resource for any agricultural operation, is a high priority for the United States. The predecessor statute to the **Clean Water Act** (CWA) dates to 1948, but the current law represents a complete rewrite in the light of growing environmental concerns in the 1960s and 1970s. The current law, written in 1972 and amended several times since, was a major expansion of the federal role in regulating water pollution, which had previously been seen as a state or local issue.

The CWA seeks to move the nation to clean, abundant water supplies, and its provisions support protection of fish and other organisms in U.S. waters. Among the requirements of the CWA was that municipal and industrial wastewater be treated before being discharged into the nation's waterways.

The CWA affects agriculture in several different ways. Conversion of wetlands to agricultural or other uses is regulated under Section 404 of the Act, which requires a permit under some circumstances when anyone discharges dredged or fill material into waters of the United States.

Many normal farming, ranching, and forestry activities are exempt from this requirement, but other activities subject a farm to the permitting process. In many cases, key concepts in the Department of Agriculture's "swampbuster" regulations (governing the conversion of wetlands) have been adopted for Section 404 permitting purposes, providing a measure of consistency in administering the two separate programs.

Although many agricultural operations are not directly regulated by the Clean Water Act, the law's prohibition against discharging pollutants into U.S. waters potentially applies to large concentrated animal feeding operations (CAFOs), defined in terms of the number of animals for various livestock species. Regulations lay out requirements for obtaining permits, filing reports, and developing plans to manage manure from these operations.

The regulations apply to CAFOs that actually discharge pollutants. As a practical matter, CAFOs develop and apply nutrient management plans whether or not they are actually required to obtain a permit under the Clean Water Act. Most of these operations recycle manure as fertilizer, either on their own farmland or through arrangements with neighboring farmers. This reuse of nutrients means that chemical fertilizer use is reduced or eliminated on the farms where the manure is applied. Some dairy farms have begun installing methane digesters that transform manure into electricity that powers the farming operation and may also be sold onto the electric grid.

Over the past decade, the government and the private sector have intensively studied the question of air pollution emissions from agricultural operations, especially livestock, poultry, and dairy farms.

But this isn't a new issue. Like many other environmental issues, policies dealing with air pollution evolved from purely local regulation in the early 20th century to a federal responsibility. **A federal clean air law** was enacted in 1955, but major revisions in 1970 reflected growing environmental consciousness and established the government's authority to set air standards nationwide and require the use of technology to improve air quality.

The Clean Air Act can affect U.S. agriculture in a variety of ways, and the farm community has increasingly focused on these issues in recent years. Under the Clean Air Act, the government establishes National Ambient Air Quality Standards that strive to protect public health from harmful levels of pollution. In parts of the United States that do not meet these standards, state and local governments work to reduce pollutants to acceptable levels.

Among the pollutants regulated in this way is particulate matter. The Environmental Protection Agency has set standards for "coarse" and "fine" particulate matter. Agricultural operations can be sources of coarse dust particles that are 2.5 to 10 microns in diameter, although these emissions come from a wide variety of industries. Much of the current regulatory activity revolves around the development of methodologies to accurately quantify emissions, which present major challenges in terms of measurement.

The Endangered Species Act has protected animals and their habitats in danger of extinction since 1973. Under the Act, the government regulates both the taking of plants and animals whose numbers are diminishing dangerously, and the permissible uses of their habitats. Under the Endangered Species Act, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service are able to designate an animal species as endangered or threatened.

The Fish and Wildlife Service also regulates each species' "critical habitat," which may include not only areas where the animal is found, but other areas that are essential to its survival. Listing a species as endangered or protected means that it is illegal for anyone to "take" those animals – meaning to hunt, harass, or harm them.

So how does the Endangered Species Act impact agriculture? When areas are designated as a critical habitat to protect ESA species, the economic impact on agriculture, forestry, and other industries can be considerable. For example, in the Pacific Northwest, efforts to safeguard salmon habitat in the Klamath River affected the availability of water for downstream agricultural irrigation and other uses.

Further, timber employment in parts of the same region was significantly affected by efforts to preserve spotted owl populations. However, overall forest inventories demonstrate that between 1953 and 2007, the volume of U.S. hardwood growing stock more than doubled from 5,210 million to 11,326 million cubic meters, while being managed sustainably and respecting the Endangered Species Act.

Another program that works to balance ecology with food production is the **Agricultural Conservation Easement Program**, which provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Agricultural Land Easements component, the **Natural Resource Conservation Service** helps American Indian tribes, state and local governments, and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, Natural Resource Conservation Service helps to restore, protect, and enhance enrolled wetlands.

Bioeconomy

So, that's my rundown of the key legislation that regulates how we manage agriculture's interaction with the environment. From farm to table, in local communities and globally, the United States is committed to addressing the complex issues of natural resource management, conservation, food security, nutrition, food loss and waste, climate change adaptation, and greenhouse gas mitigation.

Some of the ways by which we have been able to leverage the bioeconomy and production of biobased products to address some of these issues are:

- The U.S. Department of Agriculture's "*An Economic Impact of the U.S. Biobased Products Industry*" report, released in 2016, examined and quantified the effect of the U.S. biobased products industry from an economics and jobs perspective.

Specific findings are that in 2013 alone, America's biobased industry contributed four million jobs and \$369 billion to our economy. The report findings include estimates that for each job in the biobased products industry, a multiplier effect of an additional 1.64 jobs are generated in other sectors of the economy. In 2013, 1.5 million jobs directly supported the biobased product industry, resulting in 1.1 million indirect jobs in related industries.

- Furthermore, the study reports that a minimum of 300 million gallons of petroleum is replaced annually due to the use of biobased products, which is the equivalent to taking 200,000 cars off the road each year.
- The federal government will continue its systematic effort to expand the sustainable production and use of biomass. The United States currently uses about 400 million dry tons of biomass annually, with the potential to sustainably increase to over a billion dry tons per year, with significant environmental and economic benefits. We will continue to support activities intended to accelerate the growth of a renewable bioeconomy — including genomic research on bioenergy feedstock

crops and unique microbes for bioproducts, exploration of sustainable management systems, development of biomass conversion processes, and expansion of bioenergy infrastructure, as well as cost/benefit estimates and sustainability analyses of renewable energy production. There are many opportunities for growing the bioeconomy and there will be challenges to overcome as well.

My definition for “bioeconomy” is: *The global industrial transition of sustainably utilizing renewable aquatic and terrestrial biomass resources in energy, intermediate, and final products for economic, environmental, social, and national security benefits.*

So what is the bottom line for the United States? We believe that by tripling our current use of biomass to about 1.2 billion dry tons of material by 2030; we can grow the bioeconomy to:

- Create 1.5 million jobs and add \$600 billion to our economy
- Generate 100 billion kwh of electricity – enough to power seven million homes
- Produce 50 billion gallons of biofuels – 30 percent of all transportation fuels
- Produce 45 billion pounds of biobased chemicals and products
- And reduce CO2 emissions by 550 million tons annually.

So, in addition to making a big contribution to the rural economy, innovative biobased materials also have key environmental benefits, including the reduction of the use of fossil fuels and reduced associated greenhouse gas emissions. The production and use of biobased products replacing petroleum-based products reduced greenhouse gas emissions up to 10 million metric tons of CO2 equivalents in 2014.

These materials are increasingly being used as substitutes for petroleum-based materials, which have been used extensively for many years. An example of this petroleum displacement by a biobased material is the use of natural fibers in packing and insulating materials as an alternative to synthetic foams, such as Styrofoam.

Promoting Sustainability

The United States, like the European Union, seeks to promote sustainability in agriculture, yet we want to avoid differences in our approaches to sustainability resulting in barriers to trade.

The assessment of sustainability involves multiple variables, which may include water use, impact on soil health, energy use, greenhouse gas emissions, and much more. At the same time, I think we all can recognize that the concept of sustainability presents a marketing opportunity – it is becoming a formal part of commercial marketing, branding, and corporate social responsibility plans.

The U.S. consumer is also increasingly interested in sustainable food and the standards used in food production. Further, we see significant investment throughout the production chain, including the growing use of private certification bodies.

The extensive policy and regulations we have developed to protect, preserve, and manage our natural resources in a sustainable manner will also help address the interests of our consumers in the United States and the EU. The U.S. Government is always striving for improvements across the value chain and seeks to implement policies and practices that balance the goals of enhancing environmental quality, with sustaining the social and economic viability of diverse agricultural, forest, and range systems.

Generally speaking, the U.S. Department of Agriculture views sustainability labeling as a marketing tool, and accordingly, the application of voluntary sustainability claims should be left to the private sector. However, we do seek to ensure that sustainability-related marketing claims are factual and not misleading. We also provide public-good research on sustainable agricultural production practices and on the development of science-based sustainability metrics. And described already, there is a tremendous commitment from the U.S. farmers, producer, and agricultural industries to support sustainable agriculture.

Industry Commitment

Since 2013, there has been an industry initiative to tell U.S. agriculture's sustainability story. Operating as the U.S. Sustainability Alliance (USSA), with 20 member organizations representing U.S. agricultural, fishery, and forestry products, USSA works to reach the European market. For example, USSA was present at the 2015 Milan Expo as part of the American Pavilion. The Pavilion showcased U.S. leadership in the global food arena as responsible and diverse; pursuing sustainability through science, technology, innovation, and free trade.

There is also the group called Field To Market®: The Alliance for Sustainable Agriculture – a diverse alliance founded in 2007 that is working to create opportunities across the agricultural supply chain for continuous improvements in productivity, environmental quality, and human well-being. The group provides collaborative leadership that is engaged in industry-wide dialogue, grounded in science, and open to the full range of technology choices.

Conclusion

According to the United Nations Food and Agricultural Organization the production of agriculture worldwide must increase 60% between 2005 and 2050 in order to satisfy the needs of the growing population. The United States is promoting more sustainable agricultural production to meet the growing global demand for food, and we feel strongly that the best mix of technologies and techniques to achieve more sustainable production will vary by location and scale. Accordingly, we should focus our regulations and policies on outcomes rather than prescriptive practices.

New agricultural approaches, technologies, and tools will be needed to increase

The U.S. Sustainability Alliance at www.thesustainabilityalliance.us

productivity growth to meet growing food demand while conserving resources and reducing environmental impacts. We support innovation that sustainably intensifies food and agricultural production and improves farm livelihoods.

The United States is also experiencing a renewed interest in local and regional food systems that support sustainable agriculture. This interest is linked, in part, to young and beginning farmers and ranchers, and a growing consumer preference for healthy foods that are locally produced by farmers and ranchers who are passionate about environmental stewardship.

“Sustainability” means a lot of things to a lot of people, but true sustainability requires a balancing of environmental, social, and economic concerns. We view sustainability as a continuum. While it is possible to produce more sustainably, using fewer resources and reducing environmental impacts, it is not possible to fully achieve “sustainability” because the demand, the context, and the natural resource base are always changing. Yet, with advances in research, education, and extension, continuous improvements are always possible.

For comments or further information please contact
David Green at david@thesustainabilityalliance.us

About the author:

David Kostelancik, a career member of the Senior Foreign Service of the United States, is Deputy Chief of Mission at the U.S. Embassy Budapest, Hungary. From August, 2014 until August, 2015 he served as the Senior State Department Advisor to the Congressional Helsinki Commission. From July, 2012 until August, 2014 he served as Director of the Office of Russian Affairs in the Department of State’s Bureau of European and Eurasian Affairs. In that capacity, he oversaw political, economic and bilateral issues with the Russian Federation. This paper was adapted from a speech given at the Sustainable Farming Conference organized by the Hungarian Chamber of Agriculture in Budapest on October 18, 2017

Note from the editor:

The U.S. Sustainability Alliance (USSA) comprising American farmers, fishermen and foresters was formed with the recognition that sustainability is not an arbitrary threshold, but rather a commitment to continuous improvement and innovation. A goal of the Alliance is to share U.S. stewardship and sustainability practices with colleagues and counterparts across the world for greater mutual understanding of resource management practices.