

PolicyPennings by Daryll E. Ray & Harwood D. Schaffer

Chicago Council strategizes response to climate and food security issues

After examining the impact of human-induced climate change on agriculture—along with an overview of climate science—and the reasons that agriculture needs to take immediate steps to adapt to climate change, the publication, “Advancing Global Food Security in the Face of a Changing Climate” (www.tinyurl.com/mb4pj5s), produced by the Chicago Council on Global Affairs outlines a series of strategies that they believe will both mitigate the impact of climate change and advance global food security.

While, in the next 35 years, many farmers will experience weather events that are beyond anything they have experienced to date, they will also have to contend with the increasing scarcity of inputs as well as volatility in the price of those inputs. During this same period, the need for agricultural products will increase because of a larger and more affluent population.

But the future need not be as bleak as this analysis suggests if decisions are made by “governments, international organizations, and nongovernmental organizations” to help agriculture adapt to climate change. The publication then identifies a series of strategies that it believes will enhance food security, reduce greenhouse gas emissions, and increase the resilience of agriculture as it faces unprecedented challenges.

Increasing the level of agricultural research stands at the top of their list of strategies. The research program needs to include plants and animals, both domesticated and wild. The challenges researchers need to address are higher temperatures, increased weather variability, the efficient use of water, and growing crops on marginal soils, while increasing crop nutrition and yields. They call for the preservation of the germplasm of both plants and animals. To accomplish this, it will take both public and private research in the US and in research centers and universities around the world.

To guide the agenda of researchers and the strategies of producers, climate scientists will need to have access to a growing array of data to improve their models. The needed data include increases in weather variability, changes in ground-level ozone, increases in the salinization of soils and aquifers, increases in the prevalence of pests, and diseases, as well as the resistance of pests, pathogens and diseases to treatments. Other issues that will need to be incorporated into the models are changes beyond the farmgate like the disruption of food distribution channels and social unrest.

The scale of farming operations around the world goes from mega-operations that have access to hundreds of thousands of hectares to those that operate on fractions of a hectare. The large industrial-like

operations produce the bulk of the agricultural products in commercial trade, while the vast majority of farmers operate on small plots of land. For research and policies to be effective, they must be tailored to the individual farm whether it is large or small, high-tech or low-tech.

The report identifies a number of existing technologies that could be used by smallholder farmers if local circumstances were taken into account. In addition there are existing practices that farmers on larger operations could begin to use immediately. Together farmers could begin to adapt to climate change even before the fruits of increased research become available. One point the report highlights is the importance of recognizing the contribution women can make “in enhancing agricultural productivity and resilience.” In addition, “the financial needs of smallholder farmers must be met.”

The report issues a word of warning about policies that hinder food security. These include the pricing of agricultural inputs—by subsidies or taxes—as well as policies that interfere with agricultural trade and the transmission of price signals to farmers as production areas change in response to a changing climate.

The report points out that “Although future weather patterns remain uncertain, some climate change adaptation can already be built into infrastructure design for agriculture. It is usually much cheaper to build with likely climate change in mind than to retrofit. Some examples follow:

- “New rural roads should be built to withstand higher temperatures and more extreme events.
- “Dams and irrigation systems should be designed for more extreme rainfall events.
- “Construction of levies and coastal defenses for countries such as Bangladesh and Vietnam should be built for rising sea levels.
- “‘Soft’ landscape engineering such as the planting of riverine forests should be considered in flood control projects.
- “Passive policy measures such as the preservation of forests, natural grasslands, and mangroves should be put into place.”

This section of the report concludes that agriculture can make a significant contribution to slowing global warming while “supporting food and nutrition security.” Farmers can intensify production on existing land rather than increasing the land area under production, avoiding the surge in greenhouse gas emission that results from bringing new land into production. This strategy would include the remediation of farm-

Cont. on p. 2

Originally published in *MidAmerica Farmer Grower*, Vol. 35, No. 25, June 20, 2014
 2) Copy of reproduction sent to Information Specialist, Agricultural Policy Analysis Center, 309 Morgan Hall, Knoxville, TN 37996-4519

Cont. from p. 1

land that has become degraded due to a variety of circumstances.

Improved animal feeding practices can reduce greenhouse gas emissions. “In some parts of the world, meat consumption can be reduced to slow the growth of agricultural emissions,” the report points out. Improved water and fertilizer management can also help mitigate climate change while improving food security.

Daryll E. Ray holds the Blasingame Chair of Excellence in Agricultural Policy, Institute of Agriculture, University of Tennessee, and is the Director of UT’s Agricultural Policy Analysis Center (APAC). Harwood D. Schaffer is a Research Assistant Professor at APAC. (865) 974-7407; Fax: (865) 974-7298; dray@utk.edu and hdschaffer@utk.edu; <http://www.agpolicy.org>.