



## **Agriculture and Climate Change**

Agriculture causes climate change. Globally, 35 percent of greenhouse gases, including methane and nitrous oxide, come from farming. But agriculture is also affected by and a potential solution to climate change.

This is a summary of a panel discussion on climate change and agriculture at the 2008 Society of Environmental Journalists conference. The panelists were: Theo Dillaha, professor of biological systems engineering at Virginia Tech; William Hohenstien, director of the Global Climate Change Program at the U.S. Department of Agriculture; and Jeffery Moyer, farm director at the Rodale Institute.

### **Worldwide effects:**

- GDP from agriculture would likely increase in developed countries, decrease in developing countries.
- Increase temperature tends to decrease rice yields; 5 percent decline in rice production would have a disastrous impact on world hunger
- Places in South America must develop new cropping systems compatible with new temperature, precipitation and frost regimes.
- In West Africa, the rainy season may be delayed by up to a month, and erratic rainy seasons are already a serious limiting factor in the region's agriculture.

### **Effects on the United States:**

- Northern regions will be wetter, southwest and intermountain regions will be drier, western regions will have less snow
- Increased CO<sub>2</sub> concentrations may lead to quicker maturation and reduced yields of grain crops.
- Weeds more positively respond to increased CO<sub>2</sub> than cash crops. Herbicides affect weeds less under higher CO<sub>2</sub>.
- Higher temperatures will likely decrease livestock production during the summer, but decrease winter mortality

### **Organic Farming as a solution:**

- Prevailing farming systems break down soil carbon into CO<sub>2</sub> released into the atmosphere; organic systems can sequester 3 times as much carbon.
- Not using nitrogen fertilizers and chemical herbicides takes 70 percent of the energy out of corn production.
- The U.S. is capable of producing current food yields through organic systems.

### **Resources:**

Rice and Climate Change: <http://www.irri.org/publications/today/pdfs/6-3/10-15.pdf>

Rodale Institute, "Regenerative Organic Farming: A Solution to Global Warming":  
[http://www.rodaleinstitute.org/files/Rodale\\_Research\\_Paper-07\\_30\\_08.pdf](http://www.rodaleinstitute.org/files/Rodale_Research_Paper-07_30_08.pdf)

U.S.D.A. report on climate change and agriculture:

[http://www.usda.gov/oce/global\\_change/files/SAP4\\_3/Agriculture.pdf](http://www.usda.gov/oce/global_change/files/SAP4_3/Agriculture.pdf)

U.S.D.A. report fact sheet:

[http://www.usda.gov/oce/global\\_change/files/SAP4\\_3/AgricultureBrochure.pdf](http://www.usda.gov/oce/global_change/files/SAP4_3/AgricultureBrochure.pdf)

**(Reported by Jeff Gillies, Knight Center for Environmental Journalism)**