

WHAT IS AGROECOLOGY?

The academic field that bridges agriculture, nature and society.

Agroecology is the field that links theory and practice using social and natural sciences to describe, analyze and manage complex agroecosystems. The program focuses on integrating ecology, organic and conventional agriculture, socio-economics and culture with the ultimate goal of sustaining production, food security, community and environmental health.

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DEFINING AGROECOLOGY AS A SCIENCE, A PRACTICE AND A MOVEMENT

By Chuck Francis

A new article in *Agronomy and Sustainable Development* (2009) explores the origin of the term “agroecology”, a word that today is being used to describe a scientific discipline, a series of practices and systems, or a sociopolitical movement. From the 1930s to the 1960s, agroecology referred to a scientific discipline and was used primarily in Germany. Starting in the 1960s in response to Rachel Carson’s *Silent Spring*, there began a movement against the industrial model of agriculture and this led to the development of agroecological principles in the United States. Intertwined with these principles were the farming practices and integrated systems that emerged through the 1990s as an alternative to conventional chemical agriculture. Although most agronomic research up to that time was focused on individual plants, farm plots and fields, agroecology spurred a move toward the analysis and evaluation at higher levels of scale such as whole farms, watersheds, and rural landscapes. Often related to the discipline of agroecology were research and applications in organic farming and peri-urban agriculture. These became associated in part because many of the same people are involved in these alternative areas, and because most of the early information and innovation has come from farmers. Today there is an agroecological focus at the field and farm level, mostly through science, which is prevalent in Germany and France. In France, U.S.A., and Brazil there is also a healthy appreciation of agroecology as a movement. The concept of agroecology as the ecology of food systems, which encompasses the ecological, economic, political and social dimensions of food production, distribution and consumption, has taken root in the U.S.A. and in the Nordic Region.

The article may be particularly relevant for those who identify as or aim to be agroecologists. Since the definition of agroecology can be contentious, it is valuable to understand the historical context in which the field has developed, and how this has shaped the current understanding of agroecology. Ultimately, realizing the disparate origins and developmental processes of the field can facilitate communication between agroecologists who identify as scientists, practitioners or actors in a political or social movement. Since the multiple uses of the same term cause confusion among scientists and teachers, it is also wise for anyone who writes about agroecology to be explicit about their meaning of the term. The paper was written by Alex Wezel, Stéphane Bellon, Thierry Doré, Dominique Vallod, and Christophe David in France and Charles Francis in the U.S.A.



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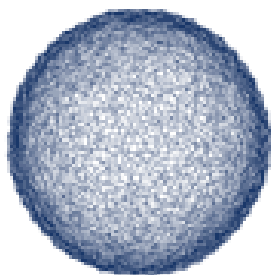
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EDITORIAL: THE CLIMATE CRISIS AND AGRICULTURE

By Karen Adler

Global climate change is a hot topic these days. Reputable research from many independent sources has shown that the world temperature is rising, and this is due to human-caused activities like fossil fuel burning, deforestation and agriculture. It is also a politically charged issue because some national governments are trying to support an international initiative to limit global greenhouse gases (GHGs) like carbon dioxide, nitrous oxide and methane. Previous efforts included the formation of the Kyoto Protocol, which proposed reducing emissions of GHGs by the nations most responsible for generating them. Famously, the United States refused to sign this treaty, and due to its economic and political influence, it was difficult for other nations to make strides in mitigating climate change without U.S. participation.

During my MSc degree, I did a class project that studied if farmers in Hainan Island, China knew about global climate change, and asked if they were adapting their farming practices in any way. My group found that some of the rural farmers were familiar with climate change as a concept, but nearly all of the farmers reported noticing that the weather was more erratic, rainfall less prevalent and crop failure more common. Some had even adapted their crop choices to suit the climatic changes they were experiencing. Survey results indicated that most farmers did not understand the scientific causes of climate change, nor were they aware of the public debates or university research taking place to predict its consequences. Instead, they contextualized what they were witnessing based on their own past experiences and the stories of rich harvests and favorable weather described by elderly relatives and neighbors.

The challenge of maintaining agricultural production is more critical than many realize. Recent research by the U.S. National Academy of Sciences found that for every degree Celsius rise above the pre-industrial average temperature that occurs due to climate change, wheat, rice and corn yields will fall by 10 percent.

This finding reminds us that agriculture and climate change are closely intertwined. There is a reciprocal relationship between the two, where climate change forces farmers to adapt their practices to sustain yields, and at the same time the management adaptations they choose can either mitigate or contribute GHGs. Examples are sequestering carbon in the soil by reducing tillage or producing methane from intensive animal production.

An interesting and controversial article on the reasons why agriculture must be on the agenda at the UN Climate Change Conference taking place in December 2009 in Copenhagen is found on the Scientific American magazine's website <http://www.sciam.com/article.cfm?id=civilization-food-shortages> [May 2009]. This article provides a broad overview of the repercussions of climate change on agriculture, focusing on how declining water tables, eroding topsoil and rising temperatures are threatening agricultural yields, which in turn can cause future food shortages that may ultimately destabilize nations. Though the article presents a somewhat subjective analysis of the impacts of global warming, it reminds us that the field of agriculture is in flux, and may change considerably in the future.

After reading this article, I began to wonder what the state of agroecology will be in twenty years, and how humanity will deal with such a major environmental modification. It also reaffirmed, at least for me, the very reasons why I chose to study agroecology. It is hard to think of a better example of a messy, complex problem whose solution will require creativity, ingenuity, patience and perhaps even revolutionary changes in human activities. Somewhat ironically, it also reassured me that there will definitely be a place for the agroecologist in society despite the economic crisis and uncertain future. People will always need to eat, and based on the current situation, there is a lot of work to be done to make sure that we can adapt to produce enough food for ourselves and to distribute it equitably.



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