A culture of cultivation

Professors Marta Guadalupe Rivera Ferré and Johann Baumgärtner explain why complex socio- ecological interactions must be considered if an effective roadmap to sustainability is to be achieved.

How did you become involved in the development of sustainable agriculture?

MR: I became interested in sustainable agriculture as part of my Bachelor’s degree in Veterinary Sciences – Sustainable Animal Production and Agricultural Economics. Later I pursued this as part of my postgraduate studies on Sociology of Agriculture and Food and Agroecology.

Do you think sufficient research is conducted in this area? What more can be done?

MR&JB: More research is certainly needed – a fact backed up by numerous statistics. For example, in Spain, organic agriculture receives 60 times less public research funding than industrial agriculture, while in the US, organic agriculture receives 40 times less funding than biotechnology, and only 0.1 per cent of experimental stations’ total land is devoted to organic agricultural research.

First of all, we need balanced public funding that distributes resources equally among the different types of agricultural research. Subsequently, researchers must learn new ways of performing research in collaboration with other actors. In my opinion, the best way to advance this field is by working with a diverse actor community to co-build resilient food systems using transdisciplinary research based on reciprocity. Furthermore, funding agencies interested in sustainable development should recognise the limitations of silver bullet approaches and provide

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Human/nature

Agricultural policies are limited in their potential to attain sustainability, partly due to a lack of combined sociological and ecological perspectives represented in agri-food management studies. Researchers at the University of Vic – Central University of Catalonia are proposing changes to thinking patterns for ecological policy design.

RESEARCHERS, INCLUDING PROFESSOR
Marta Guadalupe Rivera Ferré, based at the University of Vic – Central University of Catalonia, Spain, and Professor Johann Baumgärtner at the Center for the Analysis of Sustainable Agroecological Systems, USA, have identified a need for combined social and ecological variables to be included when devising agricultural policies.

A pervasive and outdated ‘official frame’ of agri-food disregards the complex adaptive properties of agricultural systems, separates social and ecological components, and attempts to design market-focused policies. The emphasis given to a market-driven approach has significant negative implications for small farms.

Rivera Ferré and Baumgärtner believe agri-food research must instead incorporate an ‘alternative frame’, combining natural, social and political sciences to study agri-food systems as a complex socio-ecological system (SES); analysing diverse strategies according to the social, cultural and environmental context; and rethinking the philosophical basis for approaches used for SES sustainability enhancement. Far from market health, this approach aims to support the design of people-centred policies that are firmly built with human rights in mind.

The researchers are keen to demonstrate that, while traditional scientific methods can result in small knowledge gains, they fail to tackle intrinsic problems. Agronomy studies tend to remain focused on short-term efficiency improvements and specific components of the overall agri-food system. New products and technologies can often be misrepresented as simple solutions to discrete problems; Rivera Ferré and Baumgärtner propose that they should instead be considered as elements of ‘innovation systems’ with associated social and cultural factors that dictate the uptake by farmers.

SOCIO-ECOLOGY

The group’s research suggests that advancing knowledge of how socio-ecological systems function could improve the link between agricultural scientific communities and policy makers, resulting in more sustainable solutions, policies and agricultural management for growing global agri-food problems. Also intrinsic to Rivera Ferré and her colleagues’ research is the idea that different narratives can directly affect the study of agricultural systems and management. Market-driven agriculture is considered as a way to generate economic growth, with the associated technological advances bringing about improved social welfare and reduced environmental impacts. However, from many alternative viewpoints, such as a human rights focus, agriculture should lead to healthy and culturally appropriate food and people-centric policies that result in more immediate and sustainable developmental gains. Technology is relevant in this narrative, but agricultural issues are thought of as politically based.

IN PRINCIPLE

A major focus of Rivera Ferré and Baumgärtner’s research has been to establish new principles in order to inform patterns of thinking for agricultural system study and management. These have aimed to bridge the gap between scientific and social ideas and practices. For
financial support for the combined study and management of socio-ecological systems.

Why is a better understanding of the social dimension of agriculture required?

MR&JB: Considering agriculture in a combined social and ecological context is necessary because it is an inherently social activity. Since agriculture’s early history, it has been performed by those we know as peasants and farmers. From a historical perspective, researchers are relative newcomers and cannot pretend to impose our knowledge and forms of doing. We need to learn by doing with farmers. Improved knowledge on the evolution, structure and dynamics of socio-ecological systems and the setup of bottom-up innovation systems contributes to the empowerment of agricultural societies and leads to better governance and inclusive science.

Can you discuss the key aims of your current research?

MR: Our main aim is to incorporate agricultural research into complex thinking to address agri-food related problems from a socio-ecological systems perspective. I really believe that we will not be able to achieve sustainability without understanding the complexity of food and agriculture as social activities performed in natural systems.

What questions and difficulties remain in modern agriculture?

MR&JB: Vital questions include: why do we still not have sustainable food systems after many years of research and accumulated knowledge? What is failing? What do we need to change? In other words: what are the causes of the unsustainability of our agri-food systems?

One important challenge is that scientists are not trained to work with other players and understand our research as part of a holistic complex system with adaptive properties that impacts people and nature. We are the sons and daughters of Cartesian sciences; we study the part, but we do not understand the whole – this needs to change.

THEME: RETHINKING THINKING PATTERNS

Current study and management systems rely on some of the principles that Rivera Ferré and Baumgartner have proposed, but agricultural policies would benefit from wider adoption. The researchers believe that a better understanding of the human factors and functionality of agricultural systems could be achieved by framing policy-making processes and agricultural management within an SES perspective. From a philosophical standpoint, both combining constructivist and realist positions and overcoming logical positivist thinking are key elements in any effort to navigate SES towards enhanced sustainability. The researchers further maintain that the design process of agricultural policy should consider three tiers: assessment, management and practices. With specific reference to the former of the three tiers, the researchers note: “Integrated assessment of vulnerability, inspired by both the contextual and the perceptive fields of research, is required to underpin more sustainable livelihood strategies”. Ultimately then, Rivera Ferré and Baumgartner make a compelling argument for reframing of research and management of agri-food systems, along with improved inter- and transdisciplinary integration and openness of knowledge, to produce greater ecological and social sustainability.