



Editorial

Citizen Science for Sustainable Food Systems: Open Innovation, Traditional Knowledge & People's Active Role



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The need to develop sustainable food systems is soon to become an agenda no government in the world will be able to ignore. The global food system is broken: though there's enough food on the planet for everyone, price volatility, on-farm and end-point wastage of food, food diverted for use as fuel, land buy-ups, and corporate control of agriculture have led to a scenario in which agricultural policies are not working for farmers or consumers in most countries of the world. In Europe, farmers survive only through subsidies and in the UK, in 2017 over 2,500 food banks provided emergency food supplies to thousands of families living in poverty. In December 2017 WTO talks, trade and farmers' representatives expressed despair at the unilateral policies of the USA, with the business interests of corporations having trumped the food security concerns of millions of farming-dependent households. On top of this, the unsustainable, fossil fuel intensive agribusiness sector contributes a major share of the greenhouse gas emissions driving a shift in climate patterns that is spiralling out of control.

The industrial revolution set in motion the destruction of local food systems; both in the colonised countries and in the hinterlands of the colonising countries where peasants were forced off their land to fill and labour in the factories. In India, the British East India Company bled the Indian peasantry dry through taxation: by the late nineteenth century, agricultural taxes amounted to half or more of cultivators' gross produce, leaving them with less food than they needed to support their families. Shashi Tharoor's recent book *An Era of Darkness* shows that, undivided, India's share of world GDP went from 23 percent at the onset of British rule, to 3 percent at the time of Indian independence.

Capitalistic economic development is a system that destroys all the structures that came before it, down to the community and family structures that not only benefited the capitalism of the past, but that make life liveable. This is why we are seeing farmer suicides not only in India, where the rates are astronomical, but in so-called developed countries like



Australia, the USA, the UK and France.² The more recent onset of neo-liberal capitalism – the systematic retreat of states from any regulation or control of the activities of profit-making enterprises – has had more sinister effects on local food systems that, due to the WTO, are now firmly interconnected with global corporate interests. This extremist attempt by neo-liberal forces to hand over human society to market forces had no precedent in earlier phases of capitalist development in the Western countries; which might explain why regulatory systems still exist in these countries. The regulation of chemical pesticides sale and use in agriculture provides an example in this regard.

Chemical pesticides are a global concern; it wouldn't be an understatement to say a global crisis. In Europe, pesticides are grossly over-used even though regulatory systems are in place. A recent study in Germany shows that over the past 27 years, the biomass of flying insects in nature reserves has declined by 76 percent. Another study shows a 15 percent drop in Germany's bird population over the past 10 years.³ In France, a study of 1,000 farms has shown that less usage of insecticides would result in more production on 86 percent of farms and no farms would suffer a loss in productivity.⁴ In the UK, data was presented at a conference in November 2017 showing that the number of chemicals applied to the vegetables sold in supermarkets has increased 17-fold over the past 40 years. In the same conference, evidence was presented to show that the regulatory system for pesticides is failing; as one scientist pointed out, "there are simply too many potential combinations of chemicals to test and regulate."⁵ In sum, there is no way of ensuring safe use of pesticides in agriculture. And this is the situation in Europe.

In India, home to roughly one fifth of the world population, which includes the largest share of the world's chronically poor, there is no functioning regulatory system for pesticide sales and use. The country's *Insecticides Act*, which was most likely framed to encourage pesticide use, will be 50

years old in 2018. On the ground, regulation simply doesn't exist in the majority of India's states. Pesticide companies sell pesticides to dealers, who sell them on to farmers, who apply them in unknown and unsafe dosages to crops with no knowledge of correct usage or waiting periods,⁶ after which the crops are harvested and taken by middlemen to be sold to the public without testing for residues. The Comptroller and Auditor General of India (CAG) recently carried out an audit of the Food Safety and Standards Authority of India (FSSAI), finding that 10 years after the enactment of the Food Safety and Standards (FSS) Act 2006, the FSSAI is yet to frame regulations and guidelines to govern different procedures.⁷ The CAG looked at the food analysis reports of over 200 food testing laboratories and found that 99 percent of the samples were not analysed for pesticides, and 96 percent were not analysed for microbial contamination.⁸ The sector is almost entirely unregulated.

What are the implications of the above for citizens, consumers, academics and farmers across the globe? Our food systems, like our governments, are being increasingly compromised, meaning that we seemingly have less and less control over the food reaching our plates. Aside from the most prestigious of higher educational institutes, most of which are based in the West, research funding to academics is drying up; or in some cases has never been made available. Foreign funding to civil society organisations is also being strongly clamped down upon in many countries, India included. Those wanting to work for sustainable food systems or indeed on matters relating to other systems, be they health, education or livelihood, are finding it necessary to find new ways to innovate. The way forward is participatory research, termed citizen science when defined as "public participation in organised research efforts" (see Pollard et al. in this issue).

Citizen science for sustainable food systems is the response needed across the globe for several reasons. Firstly, as mentioned above, because democratic spaces are shrinking and funding for

1. Online <https://www.theguardian.com/us-news/2017/dec/06/why-are-americas-farmers-killing-themselves-in-record-numbers>

2. Online <https://www.legalreader.com/people-finally-noticing-insect-collapse/>

3. Online <https://www.theguardian.com/environment/2017/apr/06/farms-could-slash-pesticide-use-without-losses-research-reveals>

4. Online <http://www.gmwatch.org/en/news/latest-news/17988-scientists-warn-of-toxic-chemical-cocktail-in-food>

5. Online <https://thewire.in/187597/farmers-shouldnt-die-government-addresses-rampant-pesticide-misuse/>

6. Online <http://www.downtoearth.org.in/news/doubts-raised-on-food-safety-in-india-59367>

7. 'Unsafe' rap on food regulator (December 20, 2017) The Telegraph (Ranchi edition)



people-centric initiatives is drying up. People have the right to know about and to question the results of government or industry-sponsored research – because it affects their health and lives. Secondly, and more importantly, because citizen science is the most effective response to neoliberal policies pushed by an increasingly powerful corporate lobby that has effectively taken control of most democratic(-in-name-only) governments. French philosopher and sociologist Jean Baudrillard wrote that capital “was never linked by a contract to the society that it dominates. It is a sorcery of social relations, it is a ‘challenge to society’, and it must be responded to as such.”⁹ In other words, to challenge and overcome the capitalist system in its current degraded form, as researchers and activists we must not limit our work solely to that for which we can find funding.

The best example of this is the work of Dr Debal Deb, who along with his colleague Debdulal Bhat-tacharjee conserves on just 2.3 acres over 1,300 landrace varieties of paddy – about one-fifth of the total varieties still being grown in India. This he does without government or private sector backing. His mission is to conserve and distribute the rice varieties to farmers. On top of this, Deb regularly publishes studies on the varieties, thus preventing the varieties from being patented by companies and corporations whose strategy has been to take farmer-varieties, crossbreed them, bag them up and sell them back to farmers at exorbitant prices.¹⁰

As scholars, activists and global citizens, we must find ways to develop the systems we need to live – in this case sustainable food systems– and to do so, we must work with farming communities, allowing them to co-own the research and other activities. Farmers are themselves scientists – we should keep in mind – for they themselves practice, hold and share forms of traditional knowledge that cannot be found in text books or research articles. Freed from the constraints of capital, we can develop alternative structures that will allow us to exit from the unsustainable systems within which we’ve become tightly enmeshed.

This issue begins with an article titled “The case for

citizen science in urban agriculture research” by Pol-lard, Roetan and Ward from the University of South Australia, Adelaide. The authors argue that in an un-certain future of climate change and constrained re-sources, urban agriculture is a suitable and increas-ingly necessary approach to improve food security. Their concern is to enumerate the productivity of individual food gardens, to gauge the impact such farming can have on the lives of urban residents. The second paper by Nemoto and Biazoti, titled “Urban agriculture and how bottom up initiatives are impacting on the space and policies in the city of São Paulo,” takes an approach that shows how, beyond mere provision of fresh and healthy food, urban farming can connect citizens, transform pub-lic spaces, and engage citizens in the planning of their cities to improve their lives. Writing from a city in eastern India, where one is forced to buy pesti-cide-laced vegetables from sellers sitting along gut-ters on congested roads, and where one finds few clean, green spaces, and little public participation in city planning, these articles provide plenty of ideas for possible initiatives.

Gray’s article, “Duelling the consumer-activist dual-ism: The consumption experiences of modern food activists,” debates at length the contradictions in-herent in consumer-based food activism. A way of life for those concerned with the agribusiness in-dustry and its ill-effects, this paper provides food for thought for food activists. We wish Gray the best for her ongoing research! The fourth article concerns that industry which comes to mind when talking of global agribusiness, namely the oil palm indus-try, most notorious for its active decimation of the last wild orangutans. Tittor takes a political ecology lens to examine the oil palm industry in Nicaragua, drawing on the work of two NGOs and fusing this with her own extensive fieldwork. Her paper “Docu-menting the social and environmental consequenc-es of oil palm plantations in Nicaragua” concludes that, though the negative impacts of the trade ap-pear to outweigh the positive ones, further research is very much needed.

I would like to thank the Head of the Board and the Managing Editors of Future of Food journal for invit-ing me to write the editorial to this timely thematic

8. Baudrillard, J. (1981). *Simulacra and Simulation* (translated by Sheila Glaser). University of Michigan Press.

9. Online <http://cintdis.org/basudha/>



issue. I take pleasure in peer reviewing articles for the journal and am happy to see the journal progress over the years. Let 2018 be a rewarding year for the journal's readers, contributors and editorial

team members – may our work to create a fairer and more equitable world include, more actively, the participation of those we seek to represent and support.