

Replacing Chemicals with Biology: Phasing Out Highly Hazardous Pesticides with Agroecology Executive Summary

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With Stephanie Williamson

“If we do persist with business as usual, the world’s people cannot be fed over the next half-century. It will mean more environmental degradation, and the gap between the haves and have-nots will expand. We have an opportunity now to marshal our intellectual resources to avoid that sort of future. Otherwise we face a world nobody would want to inhabit.”

Professor Robert T. Watson, Director of the IAASTD

“[S]caling up agroecological practices can simultaneously increase farm productivity and food security, improve incomes and rural livelihoods, and reverse the trend towards species loss and genetic erosion.”

Olivier de Schutter, UN Special Rapporteur on the Right to Food, 2011

Pesticides, designed to kill living organisms and deliberately released into the environment, now contaminate all parts of the world – soil, water, air, fog, snow, ice, the bark of trees, the Arctic, grasses high in the Himalayas and wildlife everywhere. They also contaminate people across the globe, and ordinary everyday exposures through use, drift and residues in food and water have resulted in a huge human toll including acute effects, chronic health problems and deaths.

Recent field surveys show that a very high proportion of farmers and agricultural workers exposed to pesticides through their work are suffering acute health effects: in Pakistan, 100 percent of women picking cotton after pesticides were sprayed, in Bangladesh 85 percent of applicators, in Burkina Faso 82 percent of farmers and in Brazil 45 percent of agricultural workers surveyed. Agricultural production also suffers from loss of pollinators and the beneficial insects that provide natural control of pests.

On top of the sheer magnitude of the human suffering involved, there is a phenomenal cost to society. UNEP’s 2013 “Cost of Inaction” report estimated that the accumulated health costs of acute injury alone to smallholder pesticide users in sub-Saharan Africa will be approximately US \$97 billion by 2020. This is not a problem confined to low-income countries: the external cost (i.e. to humans and the environment) of pesticide use in the United States is estimated to be US \$ 9.6 billion annually.

After decades of concern based on community experiences and mounting scientific evidence of the human health and environmental impacts of pesticides, the global community is now poised to take action to phase out highly hazardous pesticides. In 2006, the text of the Strategic Approach to International Chemicals Management (SAICM) recognized the need for action to reduce dependency on pesticides worldwide, including phasing out highly toxic pesticides and promoting safer alternatives. Responding to this the Food and Agriculture Organization (FAO)_ Council recommended a global phase-out of highly hazardous pesticides (HHPs).

We have reached a turning point for agriculture: it is a moment when tremendous changes can be made to address not only the damage inflicted by HHPs but also climate change, loss of biodiversity and lack of food security and sovereignty – all inextricably interwoven. As the FAO Director-General, José Graziano da Silva said in Paris in February 2015:

“The model of agricultural production that predominates today is not suitable for the new food security challenges of the 21st century. ... Since food production is not a sufficient condition for food security, it means that the way we are producing is no longer

acceptable.”

It is counter-productive to try to prop up this current, failing model by replacing HHPs with other toxic pesticides that also inflict harm on humans and environment. There are much safer, more beneficial and viable ecosystem-based approaches to pest management. Agroecology, long considered the foundation of sustainable agriculture, is the science and practice of applying ecological concepts, principles and knowledge to the study, design and management of sustainable agroecosystems. It replaces chemicals with biology in farming.

Agroecology makes sense

There is widespread high-level support for replacing the currently dominant chemical-input approach to agriculture that emerged in the 1960s with a biological approach. Since 2009, a number of UN agencies and reports have voiced support for moving forward with agroecology. These include the IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development), the current and previous UN Special Rapporteur on the right to food, United Nations Conference on Trade and Development and the FAO international and regional symposia on agroecology. Over 70 international scientists and scholars working in sustainable agriculture and food systems have called for a UN system-wide initiative on agroecology as the central strategy for addressing climate change and building resilience in the face of water crises across the globe.

“Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides with Agroecology” provides powerful evidence from every region of the world of improved yields, greater profitability for farmers, improved health, improved food security and sovereignty, greater resilience to adverse climate events, better opportunities for women farmers, improved biodiversity and social benefits such as better cooperation between farmers and within communities. For example, farmers practicing Community Managed Sustainable Agriculture in India find that their costs have been slashed by a third whilst yields have been maintained.

There are seven core principles of agroecology which aim to develop and maintain an agroecosystem that works with nature, not against it – creating a balance that keeps pests in check. These principles involve:

- ☞ Adapting to local environments
- ☞ Providing the most favourable soil conditions for plant growth
- ☞ Promoting biodiversity
- ☞ Enhancing beneficial biological interactions
- ☞ Minimizing losses of energy and water
- ☞ Minimizing the use of non renewable external resources
- ☞ Maximizing the use of farmers’ knowledge and skills

The core principles are reflected in a number of agroecological practices, such as integrating livestock into cropping farms, agroforestry, using leguminous cover crops to protect the soil and supply nitrogen, using compost and mulches, intercropping and optimizing times of planting and weeding. Agroecological farmers sometimes use biological controls and attractant traps to reduce pest pressure and work cooperatively with other farmers. Pesticides, whether biological or chemical, are used only as a last resort. The exact practices that farmers use depends very much on their on-farm realities and social conditions: there is no prescribed ‘recipe’ approach as there is with chemicals.

Case studies from Asia, Africa, Latin America and industrialized countries – on coffee, cotton, grains, legumes and vegetables – show the power of farmer-to-farmer transmission of knowledge and skills. Farmer Field Schools, a system of learning developed by the FAO which is based on farmer experimentation and learning in farmers’ own fields, have emerged as a powerful mechanism of learning about agroecology for farmers.

National policy changes

There is much that national governments can and should do to assist the uptake of agroecology by farmers. The first big step is to

challenge assumptions that current levels of dependency on synthetic chemical pesticides are necessary, and that large-scale, specialized farms highly reliant on agrochemical and fossil fuel inputs are the best way to provide food for all. On the contrary, there is clear evidence that small, diversified, agroecologically-managed farms can be just as productive overall – or more so – than input-intensive and monocultural systems. Countries need to change their policies to put agroecology at the centre of their approach to agriculture. Several countries have already taken the first steps, including Brazil, Ecuador and France.

National policies need to protect small farmers, their ownership of land and their access to water and seeds. They need to ensure equal rights for women in every sphere. An FAO report found that ensuring women farmers are adequately resourced could increase agricultural output in low-income countries between 2.5 and 4 percent, and reduce the number of undernourished people by 100-150 million. Governments need to invest in agricultural knowledge by supporting research based on farmer needs and experiences, including farmer participatory research, as well as extension services and farmer networks.

National economic policies must strengthen local food systems, re-localise markets to reduce wastage during transport and storage and improve farmers' ability to sell, and improve access to credit. Policies are needed to prevent global food retail chain domination of domestic markets. Such domination allows these chains to determine prices that result in farmers being underpaid and left struggling to survive. Full-cost accounting for agriculture would ensure the external costs of chemical-based production are taken into account. Replacing subsidies on agrochemicals with financial credits for agroecology (such as soil carbon sequestration) would level the playing field.

Changes to pesticide regulatory systems are also needed. The presumption that a pesticide should be registered if it meets certain hazard or risk criteria, regardless of whether it is needed, should be replaced by the presumption that pests, weeds and diseases should be managed by the least hazardous method – and chemicals registered only if need can be demonstrated. Existing registrations should cease when non-chemical methods or less hazardous pesticides can be substituted.

International actions

International policy action is also needed. Steps must be taken to reverse the harmful impacts of unregulated trade and redirect misguided international development policies and initiatives that hinder local, national and regional transformation towards agroecological food and farming systems. There is a need to reform, and in some cases dismantle, institutions such as regional and global trade arrangements and ownership laws that hinder the scaling up and out of agroecology. Re-structuring and re-alignment of these institutions is needed to support state and non-state actors' obligations to respect, protect, and fulfil universal human rights to food, health and a safe working environment, and to advance equitable and sustainable development goals. Intellectual property regimes that privatized seed resources – transferring ownership to commercial interests and criminalizing farmers for seed saving – need to be reoriented to protect farmers. Corporate influence over public policy and agri-food systems must be curtailed.

UN agencies, bi- and multi- lateral development institutions, international research institutes, private and public donor agencies need to prioritize participatory community-based farmer-led agroecological research, extension and education. There needs to be an FAO and a UN-wide adoption of agroecology as the central direction of agriculture. All UN agencies can contribute in important ways in assisting governments to bring their focus to agroecology. The World Bank and international financial institutions should redirect the focus of their agricultural and poverty-reduction programs to assist countries in transitioning towards equitable and sustainable agroecological systems. Inter-national and regional research institutional arrangements should prioritize agroecological research, extension and education. Multilateral and bilateral funding agencies as well as private foundations have an essential role to play in supporting the scaling up and scaling out of agroecology.

International actors must firmly commit themselves to overcoming the political, institutional and market constraints that stand in the way of widespread adoption of agroecology. It is time to restrain corporate power and influence over public agencies and democratize the agri-food system at all levels and across all relevant institutions.