

Pesticides Part III: Comparing pesticide use in agroecological and conventional agriculture

This is the third of a three part series by Thomas DeGregori, PhD, University of Houston. [Review [Part I](#) and [Part II](#)]

Last March, International Agency for Research on Cancer (IARC) – the branch of the UN's World Health Organization that studies the relationship between environmental and lifestyle hazard factors and cancer – focused on pesticides. Among its decisions, the committee [concluded](#) that glyphosate, a component of Roundup, Monsanto's widely used weedkiller, which has been in common household and agricultural use for decades, was being classified as a carcinogen in the category 2A: Probably carcinogenic to humans. That puts it in the [same category](#) as red meat and frying, among other agents or actions.

The conclusion focused on hazard and not risk, which measure the actual danger someone faces from normal usages. The decision conflicted sharply with every major science oversight agency that had previously evaluated the herbicide, known for its comparative mildness. Responsible agencies and agricultural universities [continued to recommend](#) the use of glyphosate for weed control. Protestors began demanding policy actions. There was no acknowledgement of the more toxic pesticides that were replaced by glyphosate or the resulting significant improvement in the [Environmental Impact Quotient](#) (EIQ – “The EIQ impact assessment is based on the three principal components of agricultural production systems: a farm worker component, a consumer component, and an ecological component”) that resulted when farmers switched to glyphosate from other products.

As would be expected, those who leaped on the initial report either did not read beyond the headlines or simply over-interpreted it to suit their ideological needs. The initial brief on glyphosate clearly distinguished between consumer use where there was no change from the previous conclusion of not being a hazard at the dosages encountered and occupational use, primarily in agriculture where there was a potential hazard but a risk factor was not given. It is important to note, that there were no new studies or data, just a re-evaluation of existing studies. It is understandable then that a number of regulatory agencies in U.S. and Europe quickly re-affirmed, in some case strongly re-affirmed their previous determination as to the safety of glyphosate.

One of the worst distortions of the report was on VICE an HBO [presentation](#) that fashioned itself as a balanced look at GMOs. (Unfortunately, the full program is available only to subscribers.) The host of the program, Isobel Yeung, gave opportunities to harsh critics of GMOs to make their case with no pushback while aggressively questioning a distinguished scientist, who happened to be a Monsanto vice-president, on a rather esoteric point that she did not seem to understand. The program was unbalanced throughout.

Towards the end of the program, there are two brief snippets from an interview with John McLaughlin, a Canadian scientist and member of the IARC committee, that summarized the committee's work re-assessing the toxicity of glyphosate and other chemicals. The interview made him sound like he was ringing warning bells about glyphosate. The snippets were either a case of creative editing – the video equivalent of cherry-picking – or extreme cleverness in asking questions designed to only get the answers

the interviewer sought.

Fortunately, McLaughlin subsequently appeared on a [different program](#) — The Agenda with Steve Paikin: The Last Roundup Debate — where his words were not cleverly manipulated. He distinguished between hazard and risk and indicated that as a hazard review, the new assessment was a worst case scenario that did not take into account real world exposure. It was not a measure of risk — the likelihood that someone faced actual dangers from exposure, and not a risk factor. It certainly did not suggest those eating food faced any dangers at all. Even for agricultural workers, the major potential occupational hazard, McLaughlin said that if the glyphosate is used according to instructions given by Health Canada, it is [not a health risk](#).

Are there safer, more productive alternatives to conventional agriculture?

Agroecology is currently the rage among activists in developed countries, bolstered by supporters' claims that the practice simultaneously increases yields and protects the crop against pests of all kinds. That's a false divide, suggesting that sustainability is best achieved by one particular farming method. It needs to be stated that all agriculturalists are agroecologists in that they recognize the agriculture takes place in differing environments which must be understood if one is to be successful in producing a crop and sustaining production through time. It is not a perspective invented by and unique to urban activists in developed countries who have never in or out in the field and had to deal with real problems of producing a crop.

It is easy for Jean Halloran from Consumer's Union, while on a panel in Manhattan, to [proclaim](#), "We favor a knowledge-based approach rather than a chemical-based approach to increasing production," without having to identify and implement these "knowledge-based" solutions. Walter De Jong, a Cornell University agriculturalist on the same panel:

was shocked at how people who don't live near farms feel entitled to advise farmers, especially on environmental matters.... There is a romantic notion of environmentalism, and then there is actual environmentalism. ...farmers are very conscious of the environment. They want to hand off their operation to their kids and their kids' kids, so they maintain the land the best they can while doing what they need to do in order to sell their harvest.

No one would deny that an intensive study of agroecology as a scientific inquiry and discipline could yield many insights and make a substantive contribution to agricultural development throughout the world. The problem is that it has become a religion and not a science and is being offered in exclusion to other approaches and not complementary to them. The larger problem is that as such, they don't work except in the minds of urban activists mentally and physically divorced from the realities of agriculture.

Grist reporter Nathanael Johnson asked the question: "Why aren't agroecological techniques farming spreading faster among poor farmers?" Johnson proceeded to list the many virtues of agroecology. Children in school and in 4H clubs are taught agroecology and organic methods. This has been going on for decades yet when they become adults and actually farm, they use pesticides. In his piece, entitled "Even this organic advocate thinks African farmers need herbicide," Johnson [concluded](#), "It could be that

organic methods just aren't working for poor farmers."

Other farmers and scientists have reached similar conclusions. Don Lotter, [celebrated](#) in the agroecology community, shocked his adherents earlier this year with a [nuanced analysis](#) of the limits of organic agriculture when he wrote "Facing food insecurity in Africa: Why, after 30 years of work in organic agriculture, I am promoting the use of synthetic fertilizers and herbicides in small-scale staple crop production," a discussion piece in *Agriculture and Human Values*.

Food insecurity and the loss of soil nutrients and productive capacity in Africa are serious problems in light of the rapidly growing African population. In semi-arid central Tanzania currently practiced traditional crop production systems are no longer adaptive. Organic crop production methods alone, while having the capacity to enable food security, are not feasible for these small-scale farmers because of the extra land, skill, resources, and five to seven years needed to benefit from them — particularly for maize.

Conservation Agriculture (CA) in Africa has two main categories — organic and herbicide-mediated. The organic version of CA, despite years of promotion, has had a low rate of adoption. Herbicide-mediated zero tillage CA via backpack sprayer can substantially increase conventional maize yields while at the same time nearly eliminating erosion and increasing rainwater capture up to fivefold.

The pesticide that he advocates? [Glyphosate](#), which he described as a herbicide "which is a non-proprietary product produced in Africa and approved for small farm use. The systemic nature of glyphosate allows the killing of perennial grasses that would otherwise need deep plowing to kill. The rooted weed residues protect the soil from erosion. The risks of glyphosate use are substantially outweighed by the benefits of increased food security and crop system sustainability."

[Review [Part I](#) and [Part II](#)] This blog, the third of three parts, appeared originally in *Butterflies and Wheels* with the title "A Pesticide as Medicine? Medicine as Poison? Or What is in a Name?" and can be seen in its original form [here](#).

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