

## Has agroecology been hijacked by activists more concerned about anti-GMO purity than sustainability?

Agroecology is both a movement and a science—a fuzziness that leads to confusion over what the term really means. It resists any affiliation with agribusinesses and large scale agriculture and consequent and often exaggerated negative implications, including controversies over monoculture cropping and patented seeds. Its proponents characterize multinational involvement by ag and biotech firms in developing countries as recolonization and farmer trainings by philanthropic organizations (unless they're the 'right ones') as stifling traditional methods that have been used for hundreds of years.

That's the ideological part. What's the science?

As a science, agroecology looks, or should look, at what works best to ensure healthy relationships between organisms in a connected environment. It's not, or shouldn't be, tied to a particular view or farming process, such as organic or conventional; the bottom line should be: what's sustainable.

Andrew Kniss, a weed expert at the University of Wyoming who incorporates agroecological perspectives into his teaching, noted the blurry definition of agroecology and its misuse by many people who see it almost as a spiritual movement:

Most frustrating to me, is when agroecology is used in this context: *"We don't need [insert technology here], because we have **agroecology!**"*

In the agroecology program at the University of Wyoming, we teach that proper use of technology is an indispensable part of achieving sustainability. After all, if technology in crop production was shunned, we'd have succumbed to the Malthusian catastrophe many generations ago.

Looking past the ideological associations, why shouldn't agroecology include farmers who choose in certain situations to use genetically modified seeds or hybrids and who embrace sustainable farming methods?

In the case of system of rice intensification—a widely touted successful agroecological method of raising rice productivity that minimizes water use and other inputs—emphasis has been put on the ability to raise yields without using improved seeds. Additionally, little to no inorganic fertilizer or pesticides are needed.

[According to](#) Independent Science News

Producing more output with fewer external inputs may sound improbable, but it derives from a shift in emphasis from improving plant genetic potential via plant breeding, to providing optimal environments for crop growth.

In fact, a whole systems approach is needed to achieve productivity and sustainability. It's known as

System of Rice Intensification. The practice started in the 1960s with work in Madagascar by Henri de Laulanié, S.J., a French priest, and has been documented by Norman Uphoff, a professor at Cornell University. Part of what makes it successful is its adaptability to other crops or environments. It has been used in East and Southeast Asia, Sub-Saharan Africa and Latin America. The methodology has been adapted for [teff farmers in Ethiopia](#), [sugar cane farmers in India](#) as well as by [wheat](#) and [finger millet](#) farmers.

According to Cornell's [SRI International Network and Resource Center](#), farmers using SRI plant early and quickly; space plants to minimize competition between plants for nutrients, water and sunlight; enrich soils with organic matter; and reduce and control water application for precise need.

The Cornell resource center explains that better crop management helps plants “better express their genetic potential. ... High-yielding varieties or traditional ones, hybrids or landraces, all perform better when planted with SRI methods, although some varieties respond better than others.”

The best results have come from hybrids, which is what an Indian farmer used to set a world record with 22.4 tons of rice per hectare. “So, agroecological approaches do not negate the basis for genetic research,” wrote Uphoff in a [journal article](#) in *Agriculture and Food Security*. “... Both breeding and management are essential for success.”

As of yet, there is no genetically modified rice on the market. However, beta-carotene enriched Golden Rice has made advances and should it become available, theoretically, one could successfully meld SRI techniques to Golden Rice.

As the SRI resource center points, political barriers currently bar small holder farmers from using GMOs although there are considerable demonstrated benefits. There would be little to no additional costs. It could be used with varieties farmers already have. There would be no intellectual property rights. But the ideological aversion to gene technology by those who claim to represent agroecology and the best interests of farmers remains strong.

“So even though the *science* of agroecology doesn’t support the notion that we should shun judicious use of technologies like biotechnology, synthetic fertilizers, and pesticides, the agroecology *movement* has no problem making such claims,” wrote Kniss.

Ultimately, practitioners of agroecology, the *science*, should prudently consider what kind of genetically modified traits are helpful and when it is a useful tool along side other systems-wide practices. The more they see this as a movement the less it can be a genuine tool for the developing world.

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**Additional resources:**

- [Unraveling The Mystery Of A Rice Revolution](#), NPR
- [SRI International Network and Resources Center](#)
- [Even this organic advocate thinks African farmers need herbicide](#), Grist