LAND STEWARDSHIP PROJECT

LSP *Myth Buster* #54

An ongoing Land Stewardship Project series on ag myths and ways of debunking them.

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➔ *Myth*: 'Farm the Best-Preserve the Rest' Will Prevent Ecological Collapse

➔ *Fact*: How can food production be done in a way that doesn't destroy the environment? When the issue of mitigating agriculture's negative impact on ecological health is brought up, two opposing strategies are often laid on the table: "land sharing" vs. "land sparing." Under the first system, eco-friendly measures are integrated into existing farm operations. Cover crops are used to build soil organic carbon, or an odd corner of a farm is planted to wildlife habitat, for example. The "land sparing" strategy calls for farming our most fertile agricultural lands intensively, utilizing monocultural, industrialized systems to maximize yields. The wisdom behind that latter approach is that although these industrialized sacrifice zones will be ecologically decimated, they will be productive enough to meet our food needs, leaving room for national parks, wilderness areas and other pieces of natural habitat.

The land sparing approach received a boost in August when a group of scientists published a paper in the journal *Current Biology* that showed the results of measuring carbon storage in agricultural regions in Mexico, Ghana and Poland. Because carbon is a component of greenhouse gases such as carbon dioxide and methane, its release contributes to climate change. Sequestering it in the ground slows the greenhouse effect.

The scientists found that on a per-acre basis, farms that utilize land sharing strategies stored more carbon than their high-yielding, industrialized counterparts. But it wasn't enough to make up for the fact that more of these sustainable operations were needed to produce the same amount of food. Natural lands that were not cultivated stored by far more carbon than any cultivated acres, no matter what production methods were being used, according to the study.

Such research bolsters the argument that we need to focus on strategies that raise yields on fewer acres, leaving more "natural" land available as a carbon sink. But there are a couple of problems with such a conclusion. First, as even the scientists who wrote the *Current Biology* paper concede, they didn't take into consideration the amount of carbon emissions that results from industrialized crop production itself. In other words, all that intensive production on those sacrifice acres could produce enough carbon emissions to overwhelm the positive benefits of setting aside more land as natural habitat.

The same is true of any wildlife benefits that result from the "farm the best-preserve the rest" strategy. Creating islands of healthy habitat in an industrialized landscape simply won't work, particularly for species that migrate.

"To avoid mass extinction and ecosystem collapse, we must integrate biodiversity conservation into the landscapes we use and not simply relegate nature to a limited number of protected areas that are doomed if left as isolated islands within biological deserts," write conservation biologists Claire Kremen and Adina Merenlender in the journal *Science*.

Their review paper, which was published in October, argues that relying on industrialized sacrifice zones to preserve natural lands will not provide the widespread ecosystem services the planet requires to not only repair itself, but develop more resilience in the face of climate change. They also take on the myth that farming systems that rely more on natural processes are inherently less productive. An increasing body of scientific literature, along with on-farm experience, is showing that, for example, farming systems that rely on carbon-building strategies like cover-cropping can actually out-yield conventional row crop systems once they get established. Farmers are also seeing the benefits of having natural habitat near their fruit, vegetable and even grain operations, since they provide homes for insects that provide pollination services while feeding on pest species.

Kremen and Merenlender's paper cites numerous examples from around the world where agroecological practices on working lands are producing viable yields of foods while providing ecosystem services like wildlife habitat, clean water, carbon sequestration and fewer toxins in the environment. New research is showing that human-dominated landscapes can support more biodiversity than originally thought.

The *Science* paper acknowledges that farmers who have invested heavily in the machinery and other infrastructure associated with industrialized systems are

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not likely to go "ecological" on a large-scale basis. But there is great potential for these conventional operations to borrow techniques and ideas from their ecological agrarian counterparts, and thus inject a little "naturalness" into their industrialized systems.

Here in the Midwest, conventional farmers are showing up in droves at workshops put on by the Land Stewardship Project and other groups to learn how they can revitalize their soil biome. They may not buy into agroecology whole hog, but studies show that even if conventional farmers could, for example, increase their soil organic matter by a little bit, there would be tremendous wide-scale environmental benefits.

A paper published in the journal *Science Advances* in November estimated that in the U.S., "natural climate solutions" such as cover cropping, improved grazing, alley cropping with trees, cropland nutrient management, planting legumes in pastures, improved manure management and reforestation could help sequester a significant amount of carbon, while helping to prevent the release of massive amounts of greenhouse gases in the first place. The researchers estimated that in the best-case scenario, such methods could reduce the amount of greenhouse gases in the atmosphere by 21 percent annually.

It turns out that just as they have been major contributors to greenhouse gases, Corn Belt states could play a huge role in turning back the carbon clock while providing the kind of economic vitality that supports rural communities. That's important, because when "experts" argue for a land sparing approach, they often leave one important element out of the picture: people.

More Information

• The paper "Landscapes that work for biodiversity and people" is at http://science.sciencemag.org/content/362/6412/eaau6020.

• The study "Natural climate solutions for the United States" is at http://advances.sciencemag.org/content/4/11/eaat1869.

• For more about how "ecological agrarians" are working with nature in working landscapes, see page www.badevore.com for information on *Wildly Successful Farming: Sustainability and the New Agricultural Land Ethic*.

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