



Monteverde Cloudforest Reserve provides important source of water in landscape and downstream

Path to waterfall on private property brings income to locals in the form of ecotourism

Shaded coffee extends wildlife habitat from reserve and reduces erosion

Windbreaks provide habitat and corridors for wildlife, control erosion and protect livestock from wind

All fences are live rows of trees

**ABOVE:** Some elements in an ecoagriculture landscape — the road to the San Luis Valley, Costa Rica, recently paved to prevent erosion. Coffee, corn, sugar cane and other products grown in the valley are sold at a local cooperative. Photo by Nathan Dappen.

**RIGHT:** A chameleon makes its way across a coffee plant on a plantation in Bwindi, Uganda. An example of how agricultural areas can be habitats for wildlife. Photo by Jeff McNeely.



Stand Down, Green Revolution

ecoagriculture is here

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Between 1990 and 2002, four-percent of the world's total forests were lost, primarily to agriculture. Forests and wild lands with rich biodiversity and high carbon sequestration value — especially in equatorial zones — are often under pressure for agricultural use because they are many times impoverished areas where populations farm to survive.

Historically, when soils have been depleted in such areas, farmers have moved on, slashing and burning new fields. Often the depleted fields are used by poorer farmers or grazed, further depleting the land.

So how do we, humans, limit the amount of land we need for agricultural use and its ill effects?

In 2000, Sara Scherr, Director of the Ecoagricultural Partners, helped coin the term "ecoagriculture" to describe a series of agricultural practices which work strategically both in terms of conservation and rural development. In *Farming with Nature*, Scherr and Jeffrey McNeely show that rural communities carefully managing their resources can make an ecologically sound living and achieve three goals:

- **Enhance rural livelihoods.** This includes small-scale ecotourism efforts, such as providing trail access across land to significant tourist sites.
- **Conserve or enhance biodiversity and ecosystem services.** This can be accomplished by terracing sloped fields to conserve water, soil and down-slope water quality; creating hedgerow fences to provide habitat corridors; and maintaining "patches" of native growth within the cultivated areas.
- **Develop more sustainable and productive agricultural systems.** The hybridization of perennial cereal/grain crops augmented with poly-cropping systems is perhaps the single most important piece of work being done in this area. Unlike annual crops, perennials are not replanted each year and thus greatly reduce the amount of carbon released into the air via tillage and fertilization. Perennial forms can also reduce water use and soil fertility loss.

Recent studies show that yields from ecoagriculture are broadly comparable to conventional yields in developed countries and significantly higher in developing countries where existing systems are low-input.

Successful projects are typically in indigenous-based communities with strong leadership and unification from having fought for self-governance. Communities with already degraded lands also tend to be very willing to adopt ecoagricultural practices, as well as communities with historically revered indigenous landscape features and significant biodiversity to be protected. In these cases governing agencies are eager to provide support, regulation and incentives. Communities quickly see the economic opportunities in association with the protection of biodiversity and use it as a sales tool. They tend to quickly grasp the value of getting the necessary certifications to market their products, and farmers tend to be willing to try relatively simple adjustments.

Also key is that ecoagriculture recognizes agricultural producers and communities as stewards of ecosystems and biodiversity, enabling them to play these roles effectively. Meeting the target goals of ecoagriculture usually requires collaboration and coordination between diverse stakeholders who are collectively responsible for managing key components of a landscape. This means that the conservationist and the farmer must work together and understand each other's needs and concerns to the point that they actually share them.

Successes aside, though farmers tend to be very proud stewards of their land, at times they are often unaware of and less concerned about their role in affecting the larger landscape outside their farms. And ecologists and preservationists have been historically anti-agriculture and see it as purely degrading.

But change comes particularly slowly for agro-industry leaders and, therefore, policy makers in more developed countries. Scherr indicates that we're in the middle of a paradigm shift and that those with the greatest financial stake in the old system will be the last to change. "It takes at least a generation—it will be 2025 before this stuff is standard. It's difficult to clearly define the problem, which is about 10% involved with the input and 90% to do with the management practices. That's one of the hard things for product-oriented people to understand. As a result, not enough research is being done." She goes on to say that current agricultural research and aid-funding policy is still largely based on a badly outdated model segregating the functions of biodiversity and agriculture. This highly simplified agricultural maximization model erroneously assumes that soil fertility equals the amount of fertilizers applied. As wrong as this model is, agri-corporations have made big money from it, and money-making opportunities are far from fully realized in the new model.

When asked what gives her the most hope for a paradigm shift and widespread adoption of ecoagriculture as the primary agricultural system, Scherr very confidently says: "People and farmers are willing to make good choices if they're provided with the opportunity to choose."

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