

Trees can make farms more sustainable—here's how to help farmers plant more

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Imagine making one change to a farm field so that as well as producing food, it also generated building materials, fuel and fodder. At the same

time, this change would nourish the health of the soil, regulate the microclimate and support pest-controlling wildlife. In fact, it could even produce a whole other crop.

All these things could be possible by simply planting trees amid crops—and not just trees, but also shrubs, palms and bamboo.

This approach to farming is known as agroforestry, and [experts believe](#) it could improve the sustainability of agriculture worldwide. On a large scale, it could help mitigate climate change by [storing more carbon](#) in land that can still serve other purposes. Countries can even [count trees planted on farmland](#) towards their reforestation commitments.

There is [a lot of scope](#) for planting trees on farms in south Asia and sub-Saharan Africa. But a lot of these plots [are small](#)—on average, less than 2 hectares (or two football fields). Any use of space has to really earn it.

So, how do we ensure trees work for farmers and the planet? India, where the last two decades have seen phenomenal changes in agroforestry, offers some insight.

India's agroforestry experiment

India's first effort to get more trees on farms started in 1999 with the Lok Vaniki scheme in Madhya Pradesh, a state in central India. The [state government](#) started the scheme to help farmers with degraded land secure additional income from timber and provided them with saplings of teak.

The scheme had a troubled start. The Indian supreme court had banned all tree felling except that permitted under the forest working plan three years earlier. Before farmers could sell the timber they grew, their request to fell the tree would need to be approved by the government.

Farmers were apprehensive about planting something they may not get permission to harvest, and teak trees take 20 years to yield timber. A cumbersome process for obtaining permits and high transport costs for small and marginal farmers scuppered the scheme.

The state responded by exempting certain trees from felling regulations. By 2014, India had a national agroforestry policy that offered farmers saplings and simpler procedures for harvesting and transporting trees. Still, the [tree cover](#) on farms didn't budge. In fact, the last decade has seen [a severe decline](#) in trees on farms in India, according to a study I contributed to.

The decline was pronounced among mature trees. Once these gnarled veterans had shaded open wells on farms and kept water from evaporating in the sun's glare. Now deeper bore wells could be dug, rendering such trees obsolete.

The expansion of mechanized farming put a premium on treeless fields where tractors and farm vehicles could easily maneuver. Attacks by fungal parasites claimed other trees.

Some farmers were unsentimental. In interviews, many said they saw few benefits from trees, which could prevent sunlight from reaching crops. But the decline of native trees on farms like neem, mahua and jamun, once prized for their medicinal oils and nutritious fruit, [threatened rural diets](#), particularly in the poorest regions.

Trees on farms, not tree farms

While farmland trees dwindled across India, [block plantations expanded](#). These are essentially farms growing [nothing but trees](#).

These plantations largely comprise exotic and fast-growing trees like

eucalyptus, poplar and casuarina, which are all exempt from felling regulations. Enticed by the prospect of generating [carbon credits](#) on the international carbon market, and by demand for pulpwood for making paper, farmers with some of the smallest plots in India tried switching their crops to block plantations.

When the price of carbon credits dropped with the [collapse](#) of the UN's clean development mechanism in 2012, these small farmers were left with little to show for it. [A study](#) later confirmed that many would have been better off keeping their land for agriculture.

Although there is [increasing demand](#) for pulpwood and timber in India, it is likely to favor farmers who can plant in large areas, cover harvest and transit costs, and wait for returns from plantations—a situation small and marginal farmers can ill afford.

These exotic plantations are [no boon for the environment](#) either. For instance, eucalyptus consumes a lot of water and soil nutrients, leaving the land less fertile for future cultivation. Its leaves and flowers are less useful to birds than many native trees.

There is a rush globally to plant more trees on farms without considering what farmers will do with the tree in 20 years, or how it may interfere with crop production. This problem is not unique to India and has been noted elsewhere, [including Kenya](#).

Trees should still be encouraged on farms; preferably native trees that are beneficial for local diets and medicine. So far, though, the trend in India and elsewhere has been towards block plantations of exotic trees—a phenomenon largely driven by the lure of carbon credits.

The focus should be on supporting small and marginal farmers to grow native trees sustainably. Scattered trees of many species on [small farms](#)

have bigger benefits for farmers and the environment than single-species plantations.

For that to happen, though, there has to be some way of financing this process. If carbon credit mechanisms can recognize this model of agroforestry and help small [farmers](#) add trees to their cropland, it would be a big shift in the right direction.

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