

New study finds 400,000 farmers in southern Africa using 'fertilizer trees' to improve food security

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On a continent battered by weather extremes, famine and record food prices, new research released today from the World Agroforestry Centre documents an exciting new trend in which hundreds of thousands of poor farmers in Southern Africa are now significantly boosting yields and incomes simply by using fast growing trees and shrubs to naturally fertilize their fields.

The analysis of two decades of work to bring the soil-enriching benefits of so-called "[fertilizer trees](#)" to the nutrient-depleted farms of Africa was published in the most recent issue of the *International Journal of Agricultural Sustainability*.

"In only five [African countries](#), there are now some 400,000 smallholder [farmers](#) using fertilizer trees to provide critically needed [soil nutrients](#) -- and many report major increases in [maize yields](#) -- which shows that it is possible to rapidly introduce innovations in Africa that can have an immediate impact on food security," said Oluyede Ajayi, Senior Scientist at the World Agroforestry Centre and the paper's lead author.

The study focuses on the rapid adoption of fertilizer trees by farmers targeted in research, training and extension programs in Malawi, Tanzania, Mozambique, Zambia and Zimbabwe. In eastern Zambia alone, the study reports the use of fertilizer trees grew from a [pilot project](#) in the early 1990s that involved only 12 farmers to adoption by

66,000 farmers as of 2006. In Malawi, there are now 145,000 farmers using fertilizer trees.

In addition, across the region, researchers have documented a doubling of maize yields on farms employing fertilizer trees compared to those that did not, which has dramatically increased both incomes and [food security](#). In Zambia, for example, incomes for farmers using the fertilizer trees averaged from \$233 to \$327 per hectare, compared to only \$130 for unfertilized fields. And the increased yields provided between 57 to 114 extra days of food.

"We also found that when farmers plant these trees, water efficiency improves," Ajayi said. "Farmers are getting higher yields from the same amount of rainwater. And the trees are helping reduce the run-off and soil erosion that is a key factor behind food production shortfalls in Africa."

Fertilizer trees enhance soil health by drawing nitrogen from the air and transferring it to the soil through their roots and leaf litter, replenishing exhausted soils with rich sources of organic nutrients. Scientists at the World Agroforestry Centre have been working since the 1980s to identify indigenous tree species, such as a fast growing variety of acacia that can be planted alongside crops to improve soil fertility. Among the many burdens facing African farmers are soils that are among the most depleted in the world. Yet for two-thirds of farmers on the continent, mineral supplements are either too expensive or simply unavailable.

In recent years, the Centre's work has focused on partnerships, particularly with national agriculture extension programs, that can help more smallholder farmers integrate fertilizer trees into their crop production systems. Ajayi said the rapid adoption of the fertilizer tree approach is partly due to the fact that researchers have turned over much of the project design and testing to farmers.

"Initially, these fertilizer tree projects were controlled mostly by researchers," Ajayi said. "But in the final phases of development, all of the testing in the field was completely designed and fully managed by the farmers themselves."

Ajayi also credited initiatives that focused on integrating the fertilizer tree approach with national agriculture policies and priorities.

Researchers believe wider use of fertilizer trees in Africa will require a two-track strategy that involves simultaneously engaging policy makers and farmers.

Ajayi cautioned that, while they are a natural way of supplementing the soil, fertilizer trees should not become entangled in the divisive "organic versus inorganic" debate over how to boost to increase crop yields in Africa. It is important to increase the use of both types of nutrient sources in complementary ways. For example, research has shown that coupling fertilizer trees with small doses of mineral fertilizer often results in generating the highest productivity and financial returns.

"We need to provide farmers in Africa with a wide range of soil fertility options and not focus on one type or another as being somehow superior," he said.

Researchers also say future work should focus on the potential for fertilizer trees to improve yields of high value crops, such as coffee and cocoa.

Provided by Burness Communications

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