

# Working to Achieve an African Green Revolution

The Green Revolution that began in the 1960s saved millions of lives from starvation in developing countries by dramatically increasing yields through improved crop germplasm. However, it essentially bypassed Sub-Saharan Africa. In 2002, United Nations (UN) Secretary General Kofi Anan commissioned the UN Millennium Project to eliminate poverty, improve education and literacy, promote equality, and achieve environmental sustainability and two years later called for a “uniquely African Green Revolution for the 21st Century” as part of the project. The project’s Hunger Task Force Co-Chair, World Food Prize laureate Pedro Sanchez, led a symposium in Indianapolis that provided an update on the efforts underway to achieve a Green Revolution in Africa.

“Indeed things are really beginning to happen,” said Dr. Sanchez, Director of Tropical Agriculture and Senior Research Scholar at Columbia University’s Earth Institute. “For the first time, FAO data show that per capita food

production in Africa is increasing.”

## Arsenal of Effective Interventions

Sanchez said the reasons for early success include the commitment of many African governments, the contributions from private philanthropic groups like the Bill and Melinda Gates Foundation and the Rockefeller Foundation, and the increasing importance of world poverty among the youth, religious groups, and celebrities.

“I think we’re dealing with a different generation,” he said. “This is not the ‘me generation’ that wants to be a billionaire at the age of 25. I think more people are seriously concerned about what’s happening in the world in terms of hunger and poverty. We have now an arsenal of effective interventions, and donors and governments now have to devise a massive scaling-up plan—that’s the challenge for today.”

These interventions include improved soil health, rainfed (green) water management, superior germplasm,

subsidized nitrogen and phosphorus fertilizers, nitrogen-fixing trees and shrubs, hybrid cereal seeds, school meal programs that use locally produced foods, micronutrient supplementation, cereal banks, microfinancing and crop insurance for the poor, and conservation agriculture practices. However, Sanchez cautioned that time is running out, as the deadline for achieving the Millennium Development Goals (MDGs) of the project, which range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, is right around the corner.

## Need to Take Simultaneous Steps

“We have to take several simultaneous steps,” he said. “We don’t have time for sequential steps—the deadline is 2015, and people are dying everyday. So, there’s a sense of urgency here.”

At the community level, the first step is to “get out of the hunger/disease trap” by increasing food production, improving health, and providing safe drinking water, according to Sanchez. This is being addressed in the 78 Millennium Villages that span 10 African countries. The Millennium Villages Project is based on the concept of investing \$110 per capita per year, which is split among agriculture, health and nutrition, infrastructure, and education. Sanchez said the key is to invest dollars at the front end of the



An agricultural extension officer explains improvements in crop yields during a field day in Sauri, Kenya.

food chain with farm inputs, which is more efficient than food aid. For example, a family in Malawi can be fed with \$40 invested at the front end, whereas feeding the same family with food aid would cost \$400.

"This has captured the imagination of people," Sanchez said. "The basic concept here, which is so important, is that the community leads, and it is science based."

The villages have committees that make the major decisions and work with nongovernmental organizations, local universities and governments, and other research institutions. Food production in the first of these villages has increased 3.5 to 9 times, resulting in 120,000 people who now have enough to eat, Sanchez said.

Once a village is out of the hunger/disease trap, he said the second step is to enter the market and get out of the poverty trap. To do this, farmers need to grow high-value products and be able to sell crop surpluses at good prices, which make cereal banks and storage systems important. They also need vehicles and roads to transport goods to the market, micro- and meso-financing options, market information, and crop insurance.

"The transformation from sub-subsistence to small-scale entrepreneurs is



Pedro Sanchez, Director of the Millennium Villages Project, examines soybean nodules in Sauri, Kenya, the first Millennium Village.

what's going to make this sustainable," Sanchez said. "The social transformation is perhaps the most important because we see that these villages are now going from quiet despair to hope and action and the ability to negotiate."

Sanchez said that overcoming hunger and poverty in Africa will ultimately require a "massive scaling up" of the

project, although the initial successes in the villages have set a foundation.

"The plane has really taken off," he said. "It's called African Green Revolution Airways. On this plane, the pilot is the African woman farmer, the co-pilot is an African president, the flight attendants are us, and the fuel is private sector philanthropy."



## The African Green Revolution Takes Shape

**Y**ields of African cereals have remained basically unchanged for 45 years while population has skyrocketed on the continent, creating a dire situation for many people there. During the symposium “The African Green Revolution Takes Shape,” economist Jeffrey Sachs, Director of The Earth Institute at Columbia University, said a major reason for this was that most smallholder farmers in Africa lacked fertilizers and high-yield seeds. He said he often asks farmers there if they use fertilizer.

“And the response is a peal of laughter when it is translated because the answer is nobody uses chemical fertilizer,” said Sachs, author of the *New York Times* bestselling book, *The End of Poverty*. “And so at least for the last generation, not only have farmers not been using fertilizer, but they’ve also not been able to leave the land fallow for long periods. And therefore, nitrogen depletion has become extraordinary in the last generation.”

The good news, according to Sachs, is that there is an agronomic system technologically available that could change things in a very short period of time.

“If the reason for the low yields is not something fundamental and unsolvable, but rather is the lack of improved inputs, at least we know simply at the level of agronomy that the yields can be raised significantly in a short period of time.”

And that indeed has been the experience on countless demonstration-scale efforts, such as Sasakawa 2000 or the Millennium Villages Project where smallholder farmers were availed of at least the basic input packages of soil nutrient replenishment through chemical fertilizers combined with high-yield seeds, Sachs said.

“And when that is done, as long as the water doesn’t fail because of drought, the yields typically rise from 1 tonne per hectare to 3, 4, or 5 tonnes per hectare on the very same land in a short period of time,” he said. “From an economist’s point of view, this is

quite a remarkable phenomenon to be able to see a doubling of a core economic activity...from one growing season to the next.”

### The Phenomenon of Extreme Poverty

So how can it be that the agronomic solutions to raise outputs so dramatically have been available for many years but have not been used in Africa? Sachs explained that the essence of the problem is the phenomenon of extreme poverty, which affects about 10% of the world’s population.

“When people are in extreme poverty, they can neither save for their futures, nor can they borrow even against a high-return prospect. If you don’t have enough to stay alive, you can’t save for the future. It also means that you have no assets that can be collateralized, and the ability to get a commercial loan is also pretty much nil. For whatever reason—agronomic, historical, or demographic—a region finds itself in extreme poverty, it’s extremely hard through will power or good governance alone to get out of it. It’s like pulling oneself up by the bootstraps when you have no boots and no straps or a little bit of belt tightening when you have no belt. You can’t



**Economist Jeffrey Sachs, Director of The Earth Institute at Columbia University, said a basic misunderstanding of what it means to be extremely poor by the World Bank and others has been a main reason why Africa has not yet experienced a Green Revolution.**

“ [Extreme poverty] is like pulling oneself up by the bootstraps when you have no boots and no straps or a little bit of belt tightening when you have no belt. You can't get started when you're already at the minimum for survival.”

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Sachs said there are three ways to get out of this poverty trap: move to a place where there are higher-income opportunities, have a domestic regional policy whereby rich parts of a country invest in poor parts of a country, or through cross-border financial assistance. The latter was key to the success of the original Asian Green Revolution where there was a package of private and public financing led by the Rockefeller Foundation, the Ford Foundation, and USAID.

Sachs said there could not have been a Green Revolution in Africa during the Asian Green Revolution because high-yielding varieties for Africa weren't developed until the 1980s. Unfortunately for Africa, this coincided with the advent of what became known as the “Structural Adjustment Era,” in which the World Bank and others recommended “leaving it to the market.”

“This was the essence of the problem because markets are wonderful, except for the extreme poor, for whom



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markets are designed to ignore their needs,” Sachs said. “If you're holding stock, and the CEO says, ‘I'm going to put all of my efforts into the most impoverished region of Niger,’ sell your stock. There was a basic misunderstanding of what it means to be extremely, utterly poor at the level of survival. In that condition, agricultural markets do not function. Without the infrastructure, financing, or the ability to borrow, farmers are left without inputs, and in an impoverished circumstance such as in Africa, they're left without outputs needed to generate enough food to eat and enough income for survival.

“We need a way to help the poorest of the poor jumpstart the process. That's where public policy can come in to break the poverty trap, to enable the technologies to be disseminated, and to enable the takeoff to occur.”

And indeed, things are beginning to take off, according to World Food Prize laureate Pedro Sanchez, who also spoke at the symposium.

### Reaching the ‘Tipping Point’

“I think we have reached the tipping point in our quest for solving the hunger and poverty issues of the world, particularly in Africa,” said Sanchez, who is Director of Tropical Agriculture at Columbia University's Earth Institute. “For example, food production is now increasing in sub-Saharan Africa, minus South Africa, for the first time since 1961. For the first time in over 40 years, the rate of food production is exceeding the rate of growth.”

There are a number of reasons for this, according to Sanchez. One is that many governments are committed to achieving the Millennium Development Goals, which have provided a deadline-driven, coherent business

plan .

Another is that the “scaling up” process has begun in two countries, Malawi and Ethiopia, which are implementing the “Green Revolution concept” at the national level.

“Most importantly, I think, the World Bank has totally changed its policy in the last two weeks, prioritizing agriculture and even supporting what used to be an anathema before—subsidies,” Sanchez said.

And the biofuels trend in the United States could actually create an opportunity for African farmers if they are able to take advantage of it, Sanchez predicted.

“The grain price increase due to biofuel production in the U.S. can create increased demand for food production in Africa. Prices are high—that provides a major opportunity. But like the Chinese symbol for crisis, it's crisis on one side and an opportunity on the other. The crisis could come if African countries do nothing because then they will have to import food at a much higher price.

“When it comes to biomass production for biofuels, the tropics have the edge. We know that already in the case of sugarcane but especially when cellulosic ethanol comes [to the forefront] and certainly for biodiesel. Oil palm can produce about three to five times as much biodiesel as soybeans per hectare per year.”

The next step is to scale up the successes, Sanchez said. One idea to help make this happen would be to create a global fund for the African Green Revolution similar to a very successful fund that was created to help fight HIV AIDS, malaria, and tuberculosis in Africa.

