

A GRAIN OF HOPE: TALK OF A GREEN REVOLUTION IN AFRICA

Africa may be on the brink of revolution - a green revolution. The political will to make essential structural reforms could well be in place to foster the arrival of high-tech farming techniques, say some agricultural observers. Certainly, there is a great need: in the poorest part of the continent, the sub-Saharan, 265 million people, or 32 percent of the region's population, go hungry each day. The revolution may have already begun, optimists say, pointing to the so-called Malawi Miracle, a case study in how subsidized fertilizer and hybridized seeds transformed a chronic recipient of food aid into a country that now exports food to its neighbors. However, critics aren't so sure that the miracle is sustainable in tiny Malawi, let alone throughout vast Africa. They point to political instability (Zimbabwe is the case study on that front), limited water supplies and a weak infrastructure as major impediments.

Back in the 1960s, Africa and Asia each produced about one metric ton of food per hectare under cultivation. Today, Africa still produces one, but Asia now produces around four.

What changed for Asia's fields and rice paddies was the incredible rise in agricultural productivity now remembered as the Green Revolution. The revolution was marked by the introduction of technologically advanced farming techniques – more mechanization, more fertilizer and hybridized seeds – particularly in India and the Philippines.

Today, some believe that despite limited water supplies and a weak infrastructure, Africa may have a similar miracle on the way. “There should be no doubt in your mind that a green revolution is

possible 5 to 10 years from today,” says Dr. Namanga Ngongi, the president of the Alliance for a Green Revolution in Africa.

Robert Sagna, minister of agriculture for Senegal from 1993 to 2000, also believes a green revolution is possible in Africa. “If the political will is there to make major structural reforms and allocate the right resources,” he says, “it can be done.”

If the backing for Ngongi’s group is any indication, the political will does seem to be there, at least on the international level. Ngongi’s organization is chaired by Kofi Annan, the former UN Secretary-General, and backed by the Bill & Melinda Gates Foundation and the Rockefeller Foundation, the latter a major supporter of a number of key institutions and initiatives that led to the first Green Revolution.

Certainly, the need to grow more food is there. In the sub-Saharan, the poorest part of the continent, 265 million people, or 32 percent of the region’s population, don’t get enough to eat each day, according to 2009 UN Food and Agriculture Organization figures. Even as the number of malnourished people in the developing world has fallen – it dropped from 32 percent in 1970 to 17 percent in 2007 – Africa’s level of malnutrition has remained stubbornly high, according to FAO figures. Overall, the World Bank estimates that in 2005, 51 percent of sub-Saharan people lived on less than \$1.25 a day, 2 percent less than in 1980, with a lower mean consumption level than any other region in the world – just \$0.73 in 2005.

Despite widespread water shortages, some experts say there are places where agriculture could thrive on the huge continent (a land mass so vast that China, Europe and the United States could all fit comfortably inside it). In the 1980s, for example, before Zimbabwe’s current descent into economic hell, well-run farms and an advanced national agricultural research system briefly

gave the country the distinction of being home to some of the highest-yielding maize fields in the world, higher even than in the United States.

But as the Zimbabwe example suggests, political stability and advanced infrastructure can't be taken for granted in Africa. Some critics argue that the kind of state-of-the-art farming that tends to be associated with the idea of a green revolution might not be sustainable for farmers trying to manage with weak energy and transportation systems.

The Obstacles Are Daunting

Skeptics of high-tech farming's prospects in Africa say that only more advanced economies have the cash, technology and expertise to manage sophisticated electrical systems and seed distribution networks. They argue that it's a tall order in Africa, given that less than 24 percent of sub-Saharan people have access to electricity, according to World Bank figures. In some countries, even major roads can become impassable in certain seasons.

Modern farming is a machine that requires a lot of maintenance, critics say. If a distribution system begins to break down, as it did in Zimbabwe, it can take only three years for all the productivity gains to be lost, because new hybrid seeds need to be introduced every year, says James McCann, a professor of African history at Boston University and author of [Maize and Grace: Africa's Encounter with a New World Crop, 1500-2000](#) (Harvard, 2005).

Indeed, McCann has written that maize became Africa's leading crop precisely because it didn't require a lot of fuss in its cultivation – an important consideration in areas wracked by war, ethnic conflict and other upheavals.

Some experts argue that extremely sensitive development will be needed if this green revolution is to avoid serious unintended consequences, including environmental destruction and perhaps, ultimately, even an increase in agricultural precariousness.

However, Ngongi says African agriculture is at such a low base now that even modest improvements could have an outsized impact. When it comes to fertilizer, for instance, farmers use only 8 or 9 kilograms per hectare in the sub-Saharan, compared with 150 kilograms in India and 300 in China. Even going from 9 to 30 kilograms could produce a dramatic rise in yield, says the Nairobi-based agronomist.

Other kinds of changes could also lead to major productivity gains, according to Ngongi and Sagna. In Senegal, for example, improved irrigation systems, better highways and roads, easier access to electricity and potable water and a more carefully tended countryside would all help advance the state of agriculture, Sagna says.

The Malawi Miracle

Indeed, a government productivity program in Malawi, in southern central Africa, has already demonstrated that real gains are possible.

For ten years in a row, small landlocked Malawi, roughly the size of Greece, had been a constant recipient of food aid. Finally, after the failure of the 2005 crop, President Bingu wa Mutharika decided he had had enough.

Over the objections of the International Monetary Fund, which reportedly opposed the idea of subsidizing Malawi farmers (although Mutharika supporters have noted that American, European and Japanese farmers are all heavily subsidized),

Mutharika set up a program that issued fertilizer and hybridized seeds at a subsidized price.

The result: a harvest in 2006 double the size of the 2005 crop, and when the program was repeated in 2007, an even larger harvest than in 2006. Now, for five years in a row, Malawians have brought in larger and larger harvests – and today this poor, densely populated country of 15 million is exporting food to its neighbors. More importantly, it is exporting an approach some are calling the Malawi Miracle to nearly a dozen other African countries.

Some critics, however, including GRAIN, a nonprofit group that advocates organic development for small farmers worldwide, argue that the program has significant shortcomings, particularly for encouraging what they claim is an unsustainable use of chemical fertilizer and hybrid maize.

Other agronomists, however, see it as an important step forward. “Malawi is a shining example that a green revolution is possible,” says Ngongi.

“The Malawi Miracle can serve as an example for many African countries,” Sagna agrees. “It’s worked just as well in India and in Bangladesh. Giving small producers better equipment, better training and more access to credit can lead to rapid improvements in production.”

Beware the Unintended Consequences

Of course, most revolutions have unintended consequences, and some critics warn that a green revolution may be no exception. Speaking from Ethiopia, McCann says that a focus on just one attribute can have a terrible outcome. “When the focus is purely on increasing yield or disease resistance or drought resistance . . .

the unintended consequences are the ones that you have to watch out for,” he says.

For example, he says, in a case he is researching for a book right now, an outside aid group gave special high-performing hybridized maize and fertilizer to a group of Ethiopian farmers. The farmers loved the maize, which increased production to eight tons per hectare, from two tons. However, the new variety had a terrible side effect: it created much more pollen, and pollen, it turns out, is an almost perfect food for all kinds of larvae – particularly mosquitoes, a serious problem in a region prone to malaria.

“It’s like dumping gasoline on a fire,” McCann says. “It doesn’t cause malaria, but it accelerates it.” In areas where the special variety is used, he says, people contracted malaria at a rate ten times higher than normal for the region.

Although this phenomenon was well-known to health specialists, it came as a total surprise to the agricultural scientists, according to McCann. “The health people never talked to the agricultural people,” he says.

For McCann, the lesson is not necessarily to stick with old methods of food production, but rather to proceed with some awareness of the possible impact of the new variety outside of yield. “Of course, try, but . . . one has to understand the agro-ecological context, not just the pure science of new seed types,” he says.

Ultimately, McCann argues, tremendous difficulties often arise out of a yearning for simple solutions to complex problems, such as hunger or malaria.