

THE NEXT GREEN REVOLUTION

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By PEDRO SANCHEZ

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Africa is hungry, and Americans would like to help. But we've been helping the wrong way - by providing emergency food aid rather than enabling African farmers to produce more food. Last year the United States generously gave \$500 million of emergency food aid to Ethiopia to help people survive the drought year. And how much did we provide to African farmers to help them be more productive over the long run? A small fraction of that amount - \$4 million.

As a result of the Green Revolution in the 1960s, '70s and '80s, crop yields soared in India, China and Latin America, enabling them to break free of extreme hunger and recurrent famine. Indeed, these agricultural changes allowed countries like China and India to become the emerging markets they are today.

Tropical Africa - which stretches from the southern edge of the Sahara to the Limpopo River on the border of South Africa - is finally ready for its own Green Revolution. Crop yields there are miniscule, an average of 1,500 pounds of cereals per acre compared with 2,300 pounds in India and 4,900 pounds in China.

For better harvests, Africa's farmers need four things: nutrients for the soil, which can be provided by both mineral and organic fertilizers; small-scale irrigation and technologies for collecting rainwater; sturdier, higher-yield seeds; and a corps of master farmers, trained in up-to-date agricultural techniques, who could be posted in villages and would be able to provide advice. By introducing these measures, Africans could triple food production by 2015.

Unlike the Green Revolution of the '60s, an African Green Revolution doesn't have to be based on technologies and practices that hurt the environment. Land can be reclaimed not only through appropriate fertilization but through more environmentally sensitive techniques. For starters, there's agro-forestry, which involves planting trees that replenish the soil with nutrients like nitrogen. Farmers could also learn low-till or no-till farming techniques and be encouraged to plant pest-tolerant crops, which would cut down on insecticide and pesticide use.

What's more, small-scale irrigation projects like ones under way in northern Ethiopia can bring water to parched areas more effectively and economically than the large, expensive dam projects of old. Finally, after soil and water are taken care of, biotechnology can

help, by fortifying African food crops against droughts and pests, and by increasing the nutritional content of staple foods.

A rise in crop yields would do more than end hunger. Raising the productivity of Africa's villages would also raise the status of the women on the continent. Women do much of the farming in Africa today, growing 80 percent of the food there - and they work mostly without tools or modern technologies. If farming was easier, women would be freer to find work off the farm, more girls would be able to stay in school and children would have better food to eat. History has shown that women's empowerment in turn leads to lower population growth and to advances in children's health and education. In addition, using locally grown foods in feeding programs for infants and children will generate additional demand, helping African agriculture to strengthen itself.

Given the possible rewards of African renewal, the price tag is small. Key investments on the order of \$50 per person per year in tropical African villages would put the continent on the path to long-term sustainable development. Additional annual aid from the developed world might therefore be around \$25 billion, a small fraction of what we spend over the long run on emergency food aid, disease epidemics and fighting terrorism and violence in failed states.

If we take these simple steps - and promote good governance in African countries - the continent has the potential to go from basket case to trading partner. A sign I saw at a Florida bait shop says it all: "Give people a fish and they will eat for a day; teach people how to fish and they will eat for their lifetime and they will buy fishing equipment."

Pedro Sanchez, a 2004 MacArthur fellow, directs the Tropical Agriculture Program of the Earth Institute at Columbia University.
