

Discover Newsletter for colleagues in Africa

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Part 2: How can we overcome the “Hurricane of Hunger”?

By Roland Bunch

The Secretary General of the United Nations has described the coming famine around the world as a “hurricane of hunger.” Many experts say that hundreds of millions of people could be in serious danger of dying. If even just 60 million people were to die, this would be the worst famine in recorded human history.

To cure a disease, one must first diagnose it accurately. This disaster has been brewing for more than 20 years. Before the year 2010, famines in Africa rarely affected more than 10 million people. By 2017, when the United Nations declared a famine in Africa and Yemen, 20 million people were in serious need of food aid. By 2020, that number had risen to 40 million in Africa alone. This last year, it rose to 60 million people. However, this enormous number of people was almost totally fed by the World Food Program, so few people elsewhere realized the severity of the problem. But for months before the harvest each year in Tanzania and Malawi, I saw growing lines of people pushing bicycles along village roads, each with one or two 100-lb sacks of donated grain on the backs of their bikes.

While food aid can prevent some people from dying in the short term, it is not a solution to the problem. Food aid is not a cure; it is only a short-term band-aid.

This “hurricane of hunger” has been growing worse and worse for over two decades. It is most widely believed that climate change is causing the crippling droughts across the developing world. But climate change is only about 20% of the problem. In fact, the rainfall across Africa has not decreased by more than just 5%. Such a small decrease could not be causing the devastating droughts that are now occurring every second or third year across most of sub-Saharan Africa.

In contrast, in at least five African nations—Mali, Zambia, Malawi, Mozambique and Madagascar—there are thousands of farmers who have been using green manure/cover crops (gm/ccs) for at least six years. In that time, their yields in years of good rainfall have increased from less than 1 ton to 3 tons/ha/year. In droughty years their yields have increased from almost nothing to about 2.5 t/ha! That is, once the soil has improved, the droughts reduce farmers’ much-improved harvests by only 20%.

Lack of rainfall is obviously not the primary cause of the “droughts.” That is a false diagnosis. So what is causing the droughts?

What are green manure/cover crops? These are plants, including trees, bushes, crawlers and creepers, that fertilize the soil, control weeds, and overcome droughts.

For over 2,000 years, African farmers kept their soils fertile by forest fallowing (also called “slash-and-burn agriculture”). This system kept the soil fertile for millennia with no use of synthetic fertilizers, despite people consuming a lot of nutrients taken from the soil four or five out of every twenty years. That forest also kept the weeds under control, kept the soil moist, largely controlled insects and plant diseases (without pesticides), produced tremendous amounts of biomass, and sequestered millions of tons/ha of carbon in the soil, for literally millions of years. And it did all this with absolutely no human labor.

So what is the problem now? Because of human population growth, by the 1980s, the amount of land available for Africa’s rural households decreased during the 20th century to less than 1.5 ha/family. With that small area of land, farmers could not grow forests on their land for fifteen years and still have

enough land left over to produce all the food their families needed. Farmers began reducing their fallowing time from 15 to 10 years, then to 8 years, then 4 years, and eventually to nothing. Forest fallowing is now on its deathbed across sub-Saharan Africa. As a result, the organic matter content of the soil has dropped from the 4% that was normal before the 1980s, to less than 1% today. This has caused the rainwater infiltration rate to drop from 60% to 10 or 20%. This is a huge difference!

Thus, even without climate change, the amount of water available to farmers' crops is now just 1/3 to 1/6 of what it was just 40 years ago. Furthermore, without enough organic matter, the soil becomes almost rock-hard, so crop roots cannot penetrate the soil, either.

The correct diagnosis of the problem of the crippling droughts that Africa is suffering, therefore, is the lack of organic matter in the soil. Soil degradation and not climate change is the primary cause of increasing hunger. This means that farmers have the power to solve the problem and are no longer just helpless victims. Farmers must simply learn a few new farming practices.

Green manure/cover crops can solve all these problems. They

- make the soil soft and able to absorb plenty of rainwater,
- can provide the shade and a mulch cover that will allow the moisture to stay there longer,
- keep the soil fertile (by fixing nitrogen and recycling nutrients very efficiently),
- make plowing and soil preparation totally unnecessary,
- help control weeds,
- reduce the incidence of pests and plant diseases,
- sequester tons of carbon/ha in the soil every year,
- dramatically increase crop productivity,

and they can do all this for centuries, completely without any synthetic fertilizers. Even more impressive, at the same time they can dramatically reduce both farmers' cash and labor costs

Does this sound too good to be true? Frankly, it does seem so. But these are the same advantages that we listed above in the case of natural forests. For these reasons, the most important purpose of green manure/cover crops is to "imitate the forest." This is, in fact, very easy to do.

What kind of plants can work all these miracles? There are two systems that are the most popular in Africa and are well-suited to something like 80% of drought-prone, lowland sub-Saharan Africa.

1. The first consists of using jack beans, gliricidia trees (also called "mother of cacao"), and lablab beans intercropped with maize.
2. The second one includes jack beans, gliricidia trees, pigeon peas, peanuts and cowpeas, also intercropped in maize, sorghum, millet or cassava.

In each case, the green manure/cover crops also provide a tremendous amount of high-protein food, in addition to the sustainably tripled basic grain yields. For instance, the first of these systems will provide edible gliricidia flowers, plus the leaves, pods, green peas, and dry beans of the lablab bean, a native African plant whose beans contain about 50% more protein than do our western beans. The tender lablab leaves can be very easily dried and stored for 12 months. They provide large amounts vitamins, minerals and proteins. They thereby provide a virtually free, plentiful supply of all these nutrients that is available all year-round—a nutritionist's dream come true!

Do farmers accept green manure/cover crops? Yes! Today there are over 15 million smallholder farmers around the world who have already been using them successfully, for anything between 6 and 500 years.

We now know how to end the hurricane of hunger in Africa, quite cheaply, within one generation!



This first photograph is of a field of crops where the gliricidia trees were recently planted.



In this second picture you can see the result of our motto: "imitate the forest." Here there is a mature "forest," with gliricidia trees and, under them, a very healthy crop of maize and some other gm/cc plants.

gm/cc = green manure / cover crops. These provide fertilizer and also high-protein leguminous foods, a thick mulch and tons of organic matter/ha. Carbon will also be absorbed from the atmosphere and stored in the soil, which also helps to combat climate change.