



Genetically Modified Food in the Southern Africa Food Crisis of 2002-2003

Institute for the Study of International Migration
Georgetown University School of Foreign Service



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The authors, of course, take full responsibility for the contents of this case study, but are pleased that it results from a true collaboration among many knowledgeable professionals who care about developing the best disaster response system that the international community can create.

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Introduction

Concern about the health and agricultural effects of genetically modified (GM) food has been growing worldwide. As a trade issue, the stakes are very high, as evidenced by the May 2003 case brought before the World Trade Organization (WTO) by the United States and other countries against the European Union (EU). This issue has had an important impact on the delivery of food aid in the Southern Africa crisis of 2002 and 2003. This case discusses how and why GM food affected this humanitarian crisis.

In certain countries, GM food achieved domestic political importance, leading governments to intervene to prohibit its delivery. Zambia, Malawi and Zimbabwe each took exception to the fact that about one-third of the

food aid offered in the crisis, yellow maize from North America, was genetically modified. Maize, the commodity of choice of consumers in southern Africa, is the least expensive food that the United States can provide to save the most lives in food crises, and U.S. farmers generally do not distinguish between GM and non-GM maize. The political opposition to allowing GM foods into each country flared up in the middle of the crisis, and had not been anticipated by donors or other aid agencies. Concerned about the possibility of famine in the region, the United States put ships filled with relief maize on the high seas even before the official appeals went out. Thus, much of the relevant supply chain was already filled with GM maize as the first pulse of relief response

A note on terminology:

In this case study, “NGOs” (non-governmental organizations) is used throughout to refer to nonprofit aid organizations including those in the US that often refer to themselves as “PVOs” (private voluntary organizations).

A number of terms refer to the same meaning: genetic engineering, biotech, recombinant DNA techniques, genetically modified organisms (GMOs), biotech, transgenic, etc. Throughout this case the term “GM” refers to Genetically Modified, as in “GM foods.”

when governments suddenly decided they would not permit it into their country, even though North American yellow maize has been the dominant form of emergency food aid for distribution throughout Africa for decades.

Could aid agencies have anticipated or predicted a potential reluctance to accept GM food aid during a crisis response in 2002? The next two sections of this case provide background information about this question.

Historical Background to the Genetic Change of Foods

Crops that today are considered food have evolved over hundreds of millions of years as free growing grasses to create and hold toxins that protected the grass by killing would-be predators such as insects, fungi and bacteria. When humans first began growing food crops, giving up hunter-gatherer lifestyles 14,000 years ago, they domesticated and changed these crops by breeding these toxins out of them so they would be less toxic for human consumption.² At the same time, humans had to protect the crops from pests, in recent decades through externally applied pesticides. Harvest variability used to depend more on pests. Until recent decades, one common cause of humanitarian crises was food shortages due to the decimation of vulnerable crops by pests and fungus.³

Perhaps ironically, the main target of recent GM technology has been to restore toxins

into the inside of plants, to protect the crops from pests and in the process reduce the overall level of farmer attention to and amount of pesticides.

One of the earliest activities of international aid was basic research into new techniques to improve food crops to fight hunger. The Rockefeller and Ford Foundations gave top priority in the 1950s and 1960s to funding research centers in developing countries to find high-yielding varieties of wheat and rice (and later, in the 1980s, high-yielding maize, bananas and cassava).⁴

In the 1970s, large gains were achieved in food production in developing countries – dubbed the Green Revolution – due to the development of new strains of rice, wheat and maize crops that had been developed intensively by scientists and shared with farmers. Many who track food crises credit Green Revolution crops for turning India from a famine-prone country into a food surplus country by the 1980s. Those crop modifications, as all food changes before them, were achieved through natural cross-breeding and selection of crops. Over time this permitted dramatic changes to the genetic composition of the major crops in the world.

But cross-breeding limited agricultural scientists to mixing genes between like varieties within species. In the early 1970s, recombinant DNA research provided a new technology for transferring genes (DNA) between unlike spe-

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cies. In the late 1980s, one of America's larger corporations, Monsanto, developed new techniques to splice genes from one species' DNA into another species' DNA to create foods that were more different than ever before. The use of recombinant DNA techniques is referred to commonly today as "genetic modification" (GM) to mean that DNA from one species is used to modify genes in a different species.⁵

The core technology of recombinant DNA research allowed scientists to find new ways to produce life-saving drugs and vaccines. Diabetics have benefited from insulin produced by bacteria given a human gene for insulin production. In other cases, complicated drugs can be produced through specially created, industrial GM food crops.

Although genetic modification opened a huge range of possibilities, it took some time to refine the techniques and apply them to foods in useful ways. A few major GM crops were introduced in the 1990s and were rapidly adopted by farmers, changing the face of their industries. GM cotton was swiftly adopted after 1995, leading to easier production by farmers with higher yields; it spread to use in 40 million hectares in 1999. GM soybeans and GM maize are two other important crops that came to dominate their markets.

During the mid and late 1990s, more and more U.S. farmers began to grow maize, tomatoes and soybeans using these new GM strains. By 2002 about one-third of U.S. maize

was "genetically modified." GM soybeans were named "Roundup Ready" to describe the fact that they were tailored to survive well with Roundup (proprietary, patented) pesticide from Monsanto.

GM technological development tended to concentrate among a few large companies; ten corporations today control one-third of the commercial-seed market, valued at \$23 billion, and 100 percent of the market for GM seeds. The story of GM maize and other GM food crops has largely become the story of Monsanto, a U.S.-based corporation that specializes in seed technology and global seed distribution. In the 1980s and 1990s it aggressively moved into the untested, high-risk industry of GM crop design, and at the same time positioned itself for global distribution of whatever might come. Cargill, the world's largest food trader,⁶ sold its international seed operations (including Europe and Africa) to Monsanto in 1998 for \$1.4 billion, including seed research, production and testing facilities in 24 countries, and sales and distribution operations in 51 countries.⁷

By the late 1990s, a significant and growing proportion of U.S. food aid included GM maize (either as whole grain or flour) or GM soy extract (which is used to make "blended foods" that Congress mandates be given). The main points in the evolution of GM food up to its inclusion in international food aid can be seen on the following page.

Other countries have experimented with their own, local varieties of GM crops. South Africa began mass producing GM white maize on 200,000 acres of farmland, 1 percent of the local market in 2002, after producing yellow maize since 1998 for cattle feed. Zimbabwe too had conducted research into GM crops. Dozens of GM crops are being developed in laboratories or are in field tests in many African countries, including Egypt, Cameroon, Ethiopia, Kenya, Mauritius, Nigeria, Tanzania, Tunisia and Uganda, but Zimbabwe and South Africa have by far the most. Only a few have progressed to commercial use.

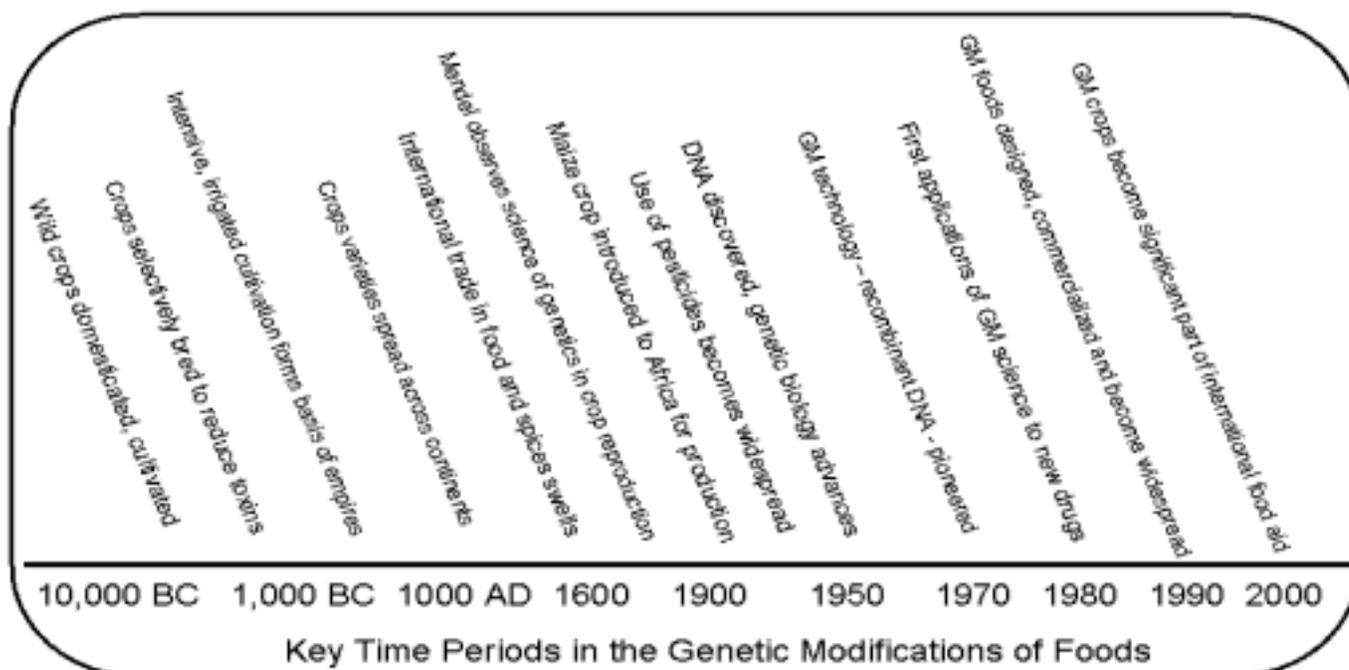
Disparate and Evolving Responses to GM Food

A number of countries (mainly where GM production was imminent) produced new regula-

tions to deal with genetic modification. The regulations were often based on a separation of contained use (production of insulin in tanks) and deliberate release (growing of GM tomatoes). This provided a legal framework to enable the development and test release of GM foods. However, when the actual products (tomatoes, maize, soy) hit the markets in the mid-1990s, concerns re-emerged as people realized they would actually eat GM foods. Neither regulatory authorities nor industries were prepared for these perceptual problems.

As Monsanto-developed seeds found their way to market in the early 1990s, U.S. industries became concerned that this could cause ethical and market repercussions, and they lobbied the Bush administration in 1991 to establish a regulatory framework. In the United States that framework was decided by the U.S.

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Food and Drug Administration (FDA), which ruled that new GM foods were similar enough to older foods to fall under the Generally Regarded As Safe legislation. This meant that each new food did not need to be tested for safety, nor monitored.⁸ Creating a new regulatory framework for new species would have been unprecedented.

Under U.S. law, there has been no requirement or expectation to distinguish and label GM foods in the pipeline of commercial food supplies. The FDA's decision not to ask farmers or merchants to segregate crops led to a system where GM and non-GM maize freely intermixed on farms, along transport routes, in silos, and even in processed and packaged foods. Today it is impossible for anyone to say or know which bag of maize in any market is GM. Nor has anyone from the U.S. administration proposed to introduce new regulations that would separate the grains.

In other countries, concerns grew that GM food and seed imports threatened to overwhelm local national markets before their governments could determine a science-based approach to GM regulation. In general, consumer skepticism of the honesty and effectiveness of government food safety regulators has been greater in countries outside the United States. In Europe, for instance, the British and French governments misrepresented the risks of mad cow disease to their citizens.

Greenpeace and other European advocacy

groups generated a public outcry and consumer backlash in Europe against foods imported from the United States. They argued that GM foods were unhealthy or potentially damaging to the environment or other organisms. Many consumer groups boycotted GM foods and convinced their governments to deal harshly with the United States in WTO negotiations to restrict U.S. imports.

In the late 1990s, European countries individually, and the EU as a group, prohibited most GM food production, import and sale on the grounds that GM foods required study before regulatory decisions could be rendered. This led to a very large drop-off in U.S. maize exports to Europe, compensated in part by Brazilian exports to Europe, which were also GM though not documented as such. The economic impact of European reluctance to import GM maize from the United States grew fast, accounting for \$200 million worth of lost sales in 1998, causing backlash in the United States.⁹

American policy makers have tended to take the position that European skepticism about GM foods from the United States is motivated at a deeper level by a desire to protect European producers from U.S. competition. However, the original European ban against Roundup Ready soybeans did not protect European producers, of which there are few, but forced European importers to find alternate suppliers (of non Roundup Ready

strains of soybeans) from the United States and Brazil.

There may be another drop-off of maize exports if other export crops in the United States and Canada also convert to GM varieties. Although it has delayed introduction of GM wheat, Monsanto has indicated that it intends to sell GM wheat in 2005, despite protests from export lobbies. Many U.S. farmers today say they support the science and value of new GM (Roundup Ready) wheat, and would indeed use it if it were released because it spares the farmer's time and labor. At the same time, the same farmers say that they hope it won't be released into the market, because overall the farm economy cannot afford to switch to wheat that Japan and Europe have already said they will not buy.¹⁰ Nervous about domestic consumer backlash, a number of larger food companies in the U.S. have also told Monsanto that GM wheat would not be desirable.

The Clinton and Bush administrations repeatedly asked the WTO to compel the EU to change its blanket restrictions against GM imports, which the United States argued violated free trade principles. The EU did shift its policy in late 2003 to allow modest amounts of GM food production and imports, even though many European consumers continued to boycott GM products.

At present, import barriers in Europe actually take two forms: formal regulations (EU and national) which, among other things, re-

quire any food containing any GM ingredients to list its GM content on the label, and informal (consumer choice). Even without formal hindrance to the import of North American GM products, there would be little market for them. A survey by the New Scientist reports: "Few consumers will even encounter food bearing the new labels. All of the retailers or food manufacturers we contacted said they would not offer GM food until they are convinced that consumers will buy. Major food chains such as Sainsbury, Tesco, Safeway and Unilever said they would continue to avoid using or marketing GM ingredients in the products they sell."¹¹

Aside from debate about regulatory frameworks, GM foods have attracted the criticism of activists, principally in Europe and India, concerned about general trade imbalances. Many critics in developing countries view GM foods not in terms of the health and economic traits of the food itself, but as elements in a larger confrontation between neo-colonialist exploiters and struggling peasants. One of the most visible and prolific critics of GM foods, Vandana Shiva, argues that GM food should not be viewed as an isolated scientific question, but instead as part of an historical process by which land, the natural environment, consumer choices and the safety of foods are subordinated to the effective control of fewer and fewer multinationals: "What we are seeing is the emergence of food totalitarianism in which a hand-

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ful of corporations control the entire food chain and destroy alternatives so that people do not have access to diverse, safe foods produced ecologically. Local markets are being deliberately destroyed to establish monopolies over seed and food systems.”¹²

Opponents of GM food argue that by adopting GM crops, small farmers in poor countries will become dependent on seeds provided only by big bio-technology companies that will impose complex contracts that reduce their ability to select among various crops. Multinationals, they argue, are both contracting the variety of crops and patenting them so they are not readily available. Opponents also criticize the overall lack of funding for GM crops that are specialized to succeed in the physical environments of developing countries. In fact, there have been few patents on the crops that have been developed for production in poor countries.¹³

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Research institutes and governments throughout the world are exploring ways to harness GM technology to improve their local food security. Agricultural scientists are among the proponents of increased research into the use of GM foods, pointing to the enormous increases in crop yields expected from GM

foods under development. Golden Rice, supported by international research institutes, was specifically created to address the pervasive vitamin A deficiency disease throughout poorer countries. Through GM insertion of vitamin A producing capability into rice, regular rice production throughout Asia can now save the lives of millions of children.¹⁴

Could GM Food Aid Controversies Have Been Foreseen?

Aid agencies routinely encounter criticism about the appropriateness of the foods delivered to meet local food gaps. Maize from the United States to Europe during and after World War II, while gratefully accepted as a lifesaver, was also insulting to many Europeans for whom maize was, in their cultures, animal fodder. Unaware that Americans consumed maize themselves, Europeans felt it implied that the recipients were like cattle.

Similarly, many Africans who customarily eat white maize, when receiving American-donated yellow maize as food aid, also have complained that it signals American contempt, without realizing that yellow maize is a staple in the United States. No educational materials accompany food aid shipments to explain that in America yellow maize is the largest single item produced, in volume, each year.¹⁵ Most aid agencies find that the criticisms of food aid tend to die away and do not impede delivery.

But until recent years, international NGOs delivering food aid had given scant attention to how controversy about GM food might disrupt their aid supply lines. In retrospect, looking back from 2003, officials of the World Food Programme (WFP) say that controversy over GM food aid was “not totally unexpected.” By 2000, internal WFP memos warned about potential problems with countries not accepting food aid. According to one policy official, both donors and implementing agencies “lacked sympathy” with the food growers in countries receiving food aid.

Aid agencies ought to have appreciated, as early as 1999, that a large and ever-growing portion of international food aid was becoming GM because more than half the total contributions to international food aid (both through WFP and directly through NGOs) comes from the United States and Canada. Since most U.S. maize and soy products were GM by 2002, it was inevitable that the introduction of GM food elements in the varied pipelines supplying aid programs in dozens of countries would provoke questions of whether food aid should be subjected to the same national regulations governing GM commercial imports. What aid agencies failed to forecast was that in many countries, the first policies addressing GM food would be provoked by food aid itself.

Some NGOs¹⁶ with relatively little involvement in food aid but with strong rights

and advocacy sections crafted policy positions warning the public against GM foods. In 1999 Christian Aid (UK) published its report, “Selling Suicide: Farming, False Promises and Genetic Engineering in Developing Countries,” which, despite its title, did not make a one-sided argument against GM foods, but argued for time to scientifically research and consider the risks, while supporting small farmers against large corporate multinational interests.

As awareness spread of the GM content of some food aid, an increasing number of countries have reacted negatively to its import. Often, environmental NGOs have challenged the entry of GM food aid, arguing that GM crops could cause damage to soils, could interfere with local (and unique) crop varieties (as was asserted in Mexico and other Latin American countries), and would discourage people from using environmentally friendly techniques in agriculture.

Media coverage has often characterized food aid in an ignoble light, at times fueling the perception of U.S. actions as “trying to force” other governments to accept its food.¹⁷ In 2001, Ugandan customs officials confiscated a corn-soy blend provided by ACIDI/VOCA to help feed 60,000 HIV/AIDS infected people out of GM concerns. Another shipment of corn-soy blend was seized for the same reason and because it did not meet the government’s labeling requirements. The Ugandan government allowed 1,500 metric tons of the im-

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pounded food to be released after requesting and reviewing information from the USDA and agricultural groups, and made future acceptance of food aid contingent on the fulfillment of labeling regulations.

Also in 2001, Bolivia, Colombia and Ecuador independently rejected U.S. food aid after suspicion of GM food was raised by consumer and environmental groups. The food was tested by independent labs and found to have between 10 and 90 percent GM content. In Ecuador, an NGO got the donation replaced with locally grown food. The Ecuadorian government has since reiterated its support of food aid programs, including GM food. The Bolivian government eventually lifted its ban on GM foods, having for two months banned all food aid and imports from the United States.

Just before GM food aid would become a controversy in southern Africa, in 2002, the government of India surprised NGOs by abruptly putting a halt to one of the most renowned food aid programs in the world. In mid-2002 the Indian government halted the import of 23,000 metric tons of U.S.-origin Corn-Soya-Blend (CSB) that CARE and Catholic Relief Services (CRS) had been distributing in more than a dozen Indian states for decades. In contrast to the rapidly initiated and scaled-up food relief to southern Africa, the comparable GM controversy in India dealt with one of the foreign aid world's oldest, largest and most established aid efforts,

the Integrated Child Development Services (ICDS) program which has fed tens of millions of children in India through food aid brought by CARE and CRS.

Begun in the 1960s, the ICDS program was a massive effort to reduce malnutrition and help to avert famine. In the decades since, India has improved its food security and by 2002 had food surpluses to donate abroad. Unlike the situation in southern Africa, during 2002 local analysts concluded that India no longer needed food aid, having graduated as a country from a food aid recipient to a food aid donor.¹⁸

In July 2002, the government of India became interested in the ingredients of CSB – a highly processed flour, produced in the United States largely with corn, which began to include GM strains of corn in the 1990s. Because CSB is a flour, contamination of crops was not an issue in India. The primary concern was human health risks. Indigenous advocacy groups in India argued that not only were GM foods dangerous, but regular U.S. food aid – corn and oil – was substandard and fit only for feeding cattle, disregarding the fact that the same U.S. corn is a staple of most Americans' daily diets.

The Port of Calcutta held up shipments even once they had passed through the Indian Port Authority. Some of the food aid was eventually released, but as of the report date, some was still being detained. Seizures of food ship-

ments have reportedly resulted in shortages of needed food and significant financial losses to NGOs.¹⁹ According to NGOs, much of the source of antagonism originated from local governments, not the federal government.

The Indian government was not attempting to make a general stand against allowing GM technology into its own economy. Although many groups in India strongly oppose all GM technology, the government of India has been interested in sponsoring GM research and applications in Indian agriculture. Before the food aid controversy, the Indian government had approved domestic production of three GM cotton hybrids.

Lobbying for acceptance of U.S. PL480 food fell largely on the aid branches of the U.S. government, with USAID taking a lead.²⁰ USAID Administrator Andrew Natsios offered his opinion about India's longer-term interest:

“They are developing their own biotech crops in India. I think the decision that the Indians made not to accept (the food aid) has to do with competition, not with questions as to whether biotech is a good idea... It's trade that's the issue.”

The pivotal issue articulated at that time by the Indian government was whether residual traces of one particular GM DNA strain – StarLink²¹ – might be contaminating incoming food aid. While U.S. authorities gave assurances that food aid consignments have always tested negative for StarLink (StarLink

production had been entirely discontinued in the United States), they could not promise that no StarLink contamination could ever occur.²² Thus, because of a technicality in monitoring, the world's largest and one of its most successful voluntary-agency aid programs lost its international support.

Experimentation with new crops in the southern Africa region

GM food was introduced in southern Africa in the 1990s through both the humanitarian and commercial sectors. WFP has been distributing GM food aid in southern Africa since the mid-1990s.²³ The United States provides more than half of the food aid, much of which is distributed by WFP, and approximately 35 percent of U.S. food aid may contain GMOs.²⁴

Zambia's food security had captured priority attention of donors in the 1970s and 1980s. Donors such as USAID had supported the local adaptation, in Zambia, of new hybrid maize varieties, and tried to help small farmers, though these interventions in agricultural markets were later found to be too costly for the Zambian government to sustain.²⁵

South Africa – the largest and wealthiest country in the region – is a major agricultural supplier in the region, and South African-produced GM food has been sold in the region since 1998. South African officials claim that GM maize introduced in 1998 was mainly meant for animal feed, though the possibility

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of human consumption or seed use cannot be ruled out.²⁶ South Africa is the only country in the SADC to license the production of GM crops and pioneered the planting of GM white maize, the region's staple food source. From 10 to 15 percent of South Africa's maize production was estimated to be from GM seeds by 2002.²⁷ The country's first genetically engineered crops (a cotton strain and two maize varieties) were approved for commercial production by the South African Committee on Genetic Engineering (Sagene), South Africa's official regulator, in 1996 and 1997. The GMO Act of 1998 came into effect April 1999,²⁸ providing for control and regulation of GM product imports.²⁹ At the time of the food insecurity situation in southern Africa, new legislation was pending in South Africa to control the labeling of GM food as soon as the country's Bureau of Standards finalized its system to segregate GM from non-modified food. The legislation was introduced in anticipation of EU regulations on the labeling of GM imports. At the time of the 2002 food aid crisis in southern Africa, it was impossible to know which of South Africa's maize was GM because as in the United States and Canada, South Africa regulations did not require segregation and tracking by lot.

Zimbabwe too was experimenting extensively with GM foods. Because Zimbabwe had been a major exporter of agricultural commodities, it had more experience with and sensitiv-

ity to the potential export problems to Europe regarding GM varieties.

The Southern Africa Food Crisis of 2002-2003

The southern Africa food crisis of 2002-2003 reportedly affected more than 15 million people across seven Southern African Development Community (SADC) countries (Angola, Lesotho, Malawi, Mozambique, Swaziland, Zambia and Zimbabwe). The crisis had many causes, varying in magnitude from country to country, including climate, bad governance, inadequate agricultural policies, HIV/AIDS, and collapsing public services.

The Famine Early Warning Systems in southern Africa raised alarm early in the fam-



ine cycle. In Zambia, for example, the USAID Mission requested food assistance from donors in November 2001, as the southern portion of Zambia, in particular, experienced drought conditions. In March 2002, the Zambian Minister of Agriculture concluded that his country would experience a second bad harvest. By May 2002, FAO-WFP crop and food supply assessments estimated that more than 2 million vulnerable people in Zambia were in need of cereal food aid. The Zambian government declared the food crisis as a national disaster on May 29, 2002.³⁰

An all partners meeting brought the region together on June 6 and 7 in Johannesburg. According to the UN Consolidated Inter-Agency Appeal in Response to the Humanitarian Crisis in Southern Africa issued in July 2002, the WFP Emergency Operation Plan (EMOP) aimed “to prevent loss of life and reduce malnutrition related to the food crisis through the provision of adequate, targeted food aid to the most vulnerable groups, including HIV/AIDS affected orphans and vulnerable children....About 13 million people in Southern Africa are on the very edge of survival as the region struggles with shortages of food not seen since the drought of 1992.”³¹ These estimates increased in time. Zimbabweans accounted for almost half of those “threatened by starvation.”

The July 2002 Consolidated Appeal for aid explained the food insecurity problems in some

detail, but failed to mention the GM issue. It had not been anticipated yet when UN and donor agencies convened that summer.

As in many crises, an overall shortfall of donations contributed to the slow response. In October 2002, the UN reported that the timing of donor contributions was disappointing. “Limited availability of supplies and funds and the complications caused by the Genetically Modified Organisms (GMO) issue negatively affected plans to pre-position food ahead of the rainy season.”³² The September regional vulnerability assessment confirmed the severity and complexity of the food crisis: “For the six (SADC) countries, 14.4 million people have been adversely affected by food shortages and risk losing their livelihood assets, suffering from acute malnutrition or death, if food assistance is not provided.” An estimated 1 million metric tons of emergency cereal food aid was reportedly required until the next main harvest in March 2003. Zimbabwe represented almost half of the regional needs.

Thus, when the GM controversy suddenly loomed as a potential break on further food aid transport into the emergency-affected countries, as in India, it threatened hundreds of thousands of lives, according to the UN.

Policies about GM food imports complicated the aid effort

The major constraint to the ambitious 2002 food relief plan turned out to be recipient gov-

An estimated 1 million metric tons of emergency cereal food aid was reportedly required until the next main harvest in March 2003. Zimbabwe represented almost half of the regional needs.

The governments of the affected nations did not have GM food policies in place...Zimbabwe was the first government to raise concern about GM whole kernel maize in June 2002...In late August, Zimbabwe agreed to accept the whole kernel maize but would only distribute it after milling and labeling...By August 2002, there was great uncertainty throughout the aid world about which countries would allow which lots of food aid and when.

ernment policies on acceptance of GM food aid. A high percentage of the food aid, particularly maize, that had been received or purchased by WFP appeared to have had GM content. The governments of the affected nations did not have GM food policies in place. Despite the fact that GM foods had been circulating noticeably for years in the region, in August 2002 the GM issue started receiving intense attention by the region's governments.

Zimbabwe was the first government to raise concern about GM whole kernel maize in June 2002. President Mugabe denounced a shipment of 10,000 metric tons of such maize at the July 2002 World Food Summit in Rome. That shipment was re-routed to Malawi while negotiations ensued with Zimbabwe over transport, packaging and milling. In late August, Zimbabwe agreed to accept the whole kernel maize but would only distribute it after milling and labeling.

Milled grain can no longer be planted as seed, nor can it cross-fertilize other seeds or crops. Therefore, by milling GM maize prior to bringing it into or distributing it within a country, both the economic (future crop varieties planted and exported) and environmental (biodiversity) concerns are avoided. In contrast, whole grain GM food contains Living Modified Organisms (LMOs), which are the subject of the Cartagena Biosafety Convention.

Zimbabwe's early reaction against GM food aid had little to do with Zimbabwe's

reluctance about GM technology, since it was experimenting with GM production itself, and was importing GM food from South Africa. Zimbabwe's concerns related to access to EU markets, local environmental impacts and human safety. In addition, Zimbabwe was irked by U.S. sanctions.

Nevertheless, in solidarity with Zimbabwe, other SADC nations followed Zimbabwe's lead by suddenly, in 2002, taking GM food aid concerns seriously and moving to regulate them. By August 2002, there was great uncertainty throughout the aid world about which countries would allow which lots of food aid and when. It became a guessing game about how and where to direct the pipeline of foods, which were being brought in by dozens of different, independent aid agencies.

Swaziland, Lesotho, Mozambique, Malawi and Zambia each went through their own process of deliberation about whether or how to accept GM food aid. Although aid agencies felt a rush to get the food in and distributed, it was not clear how long it would take for governments to deliberate their new policies, as GM regulation could conceivably involve roles by different ministries (agriculture, health, trade, technology) and different parts of government (President, Prime Minister, Parliament, regulatory bodies, agricultural grain boards which implement food trade).

Zimbabwe appeared to be the most problematic country early on because it required

the greatest amount of food aid overall and because its government had the most political tensions with donors. In Malawi the international community was able to ramp up more quickly than elsewhere in the region because the GM issue did not become serious there until later in the emergency. But it was Zambia where the GM issue came to the most severe loggerhead.

Zambia had imported GM maize from South Africa and previously accepted GM food aid.³³ The United States had told WFP that it would bring in up to 75,000 metric tons of maize for Zambians. In March 2002 in a public meeting with donors, the Zambian Minister of Agriculture, when asked about the issue of Zambia accepting GM food aid in the absence of policies on biotechnology and biosafety, waved away the concern. The U.S. food aid offer was reiterated during the 2002 summer when the Congressional Black Caucus and the head of the Office of U.S. Foreign Disaster Assistance, Roger Winter, visited Zambia. During the summer, WFP brought about 30,000 metric tons of U.S. maize into Zambia.

Then the GM issue hit. On August 12, 2002, the government of Zambia hosted an *indaba* (a town hall meeting) on GM food aid. The Secretary of the Cabinet and the Ministers of Agriculture and Science and Technology moderated the meeting, which lasted more than six hours. Reportedly, those opposed to GM food aid packed the meeting and shouted

down those who attempted to speak in favor of Zambia's accepting the U.S. relief maize. The moderators reportedly cut off those who attempted to speak in favor of biotech maize.

The Jesuit Center for Theological Reflection (JCTR) in Lusaka, Zambia examined the GM food issue as well. A study on the production and agricultural impact of GM by Bernadette Lubozhya, a Zambian agricultural scientist at JCTR, came out on August 15, 2002, engendering a lot of discussion. The study focused on the importance of sustainable agriculture for food security in Zambia, and raised concerns regarding a negative impact of GM food on sustainable agriculture. While the study concluded that GM food should not be introduced into Zambia, it also advised that the Zambian government accept milled GM food aid as a last resort to address the food shortages.

On August 16, 2002, the Zambian government decided to stop allowing GM food aid into the country and ordered WFP to stop distribution and to guard the existing maize in its warehouses as it examined its options.³⁴ Zambia's Minister of Information and Broadcasting Services, Nestead L. Zimba, announced the decision:

"I wish to inform the nation that government has finally decided not to accept genetically modified foods even in our current food deficit situation. In light of uncertainties surrounding the likely consequences of consuming GM foods, government has decided to take

It was Zambia where the GM issue came to the most severe loggerhead.

“Zambia’s decision in late October 2002 to ban GM food stocks turned a steady pipeline into a fragile one overnight.”

the precautionary principle on this matter. In the absence of a national biotechnology and biosafety policy framework as well as inadequate national capacity to deal with GMs it would be risky for the country to receive GM products. The acceptance of GM maize in the light of absence of evidence of its safety on human health would pose a danger to the lives of our citizens and environment. The immediate possible threat of contaminating local indigenous and hybrid seed stocks would also be another serious risk posed by GMs.”³⁵

During a period of considerable uncertainty on the ground, the Zambian government took another 10 weeks before it issued a final decision to reject both milled and unmilled GM food aid.

There are a multitude of possible reasons for the Zambian government’s decision to reject U.S. maize. These may have included a sense of nationalist pride; pique at that moment with the United States, perceived to be pushing hard for acceptance of its food aid; suspicions by some senior leaders about advanced technology; limited understanding among decision makers about biotechnology; efforts by Europeans and global environmental groups to sow fear about the loss of European markets for Zambian produce; and domestic political factors whereby the government did not want to give the opposition an issue to use against it.

According to OCHA, the Zambian government’s refusal to accept GM maize significantly affected the humanitarian effort:

“Persistent uncertainty regarding the acceptance of genetically modified (GM) foods has posed considerable challenges for the delivery of food assistance in Zambia. Staffing, warehousing, and distribution schedules have been interrupted and the pipeline severely stretched. In order to continue distributions of food to vulnerable populations, WFP has begun using recent cash contributions to the Emergency Operation to procure non-GM commodities. To the maximal extent possible, procurement is taking place in the region. . . . Regionally available resources, however, are insufficient to meet the shortfall in Zambia. It is likewise doubtful that expected shipments will arrive in time to meet full food requirements. Consequently, food distribution agencies are currently prioritizing allocations to first reach the most vulnerable populations.”³⁶

“Zambia’s decision in late October 2002 to ban GM food stocks turned a steady pipeline into a fragile one overnight. Subsequent delays in arrivals of alternatives due to logistics and funding shortfalls meant that food assistance delivered was well below target.”³⁷

Overall, the debate over whether GM foods (principally maize) cause health problems (a European concern in origin) appears to have been secondary to agricultural concerns in southern Africa about whether future exports to Europe would be hindered due to the cross-fertilization of local crops with U.S. strains. For most countries, the main policy issue was to ensure that the incoming food aid did not mix with domestic seed stocks.

The struggle of developing countries such as Zambia is to find any significant variety of exports. Overall, southern African countries worried not that GM foods would endanger their biodiversity, or poison their citizens, but that they would intermix with local crops and, as in the United States, Canada, Mexico and Ecuador, become impossible to clear out. Ultimately this would close off the future export market to Europe and numerous markets in Asia, including Japan. In most cases, it was public opinion that compelled governments to set policies tentatively restricting GM foods.

Critics of this view responded that Zambia and Malawi had little likelihood of growing enough to export much to Europe any time soon. But though the probability was against them, the stakes were very high nevertheless, given that these poor countries had staked so much of their overall economy on maize production.

Concerns about loss of future food exports were anticipated in a study conducted in 2001 by IFPRI, which found that as more and more countries are denied GM food sales to European markets, more opportunities would open up for countries, such as in southern Africa, to step in and sell. The same book also cautioned that adoption of GM technology in poorer countries could lead to increased inequality, as smaller farmers who could not afford the requisite fertilizer, new-seed-purchases-each-year and marketing are edged aside by

industrial farmers.³⁸

During the final months of 2002, differing views about GM food aid led to an increasingly public dispute over its role in food aid. Southern African governments, the U.S. government, the EU and UK exchanged contentious words about one another in a manner that generated worldwide publicity.

On the one side were Africans asserting their right to make their own decisions about what type of foods they deemed appropriate. A summit of NGOs in Malawi concluded:

“We strongly object that the image of the poor and hungry from our countries is being used by giant multinational corporations to push a technology that is neither safe, environmentally friendly nor economically beneficial to us.”³⁹

Throughout this period, Robert Mugabe, the President of Zimbabwe, expressed disdain for international institutions and international aid.

On the other side were representatives of the U.S. Government arguing that given the lack of any evidence that GM foods were harmful, this was a particularly bad time for countries to suddenly raise import restrictions against humanitarian aid meant strictly for human consumption. USAID Administrator, Andrew Natsios, said:

“I have to say the thing that is disturbing to me is the timing of this. We have been eating GMO corn for seven years in the United

*States and we have been using it in our programs for seven years. I find it odd that these groups are, all of a sudden, raising this issue in the middle of the worst crisis in more than a decade; the timing could not have been more disastrous. If they wanted to raise this, it should have been in a year where there were good crops and where we had no problems at all.*²⁴⁰

According to Natsios, when he met with heads of state in the region, he asked them which foods the United States could substitute for GM foods: “I offered the heads of state in those countries wheat. We do not grow genetically modified wheat or sorghum or rice in the United States. [But] they rejected them all.”

Secretary of State Colin Powell, when visiting South Africa, explained that he and other Americans ate GM maize all the time. Other U.S. officials blamed the EU for intentionally instigating fears of GM foods among Africans, as support for EU policies, while putting African lives at risk due to the cutoff of emergency relief. An EU foreign aid commissioner accused the United States of lying about this; he argued that the United States knew well that the EU had not warned southern African countries that there would be adverse outcomes from accepting GM food.

In reaction to criticisms by U.S. officials, at one point the UK’s Environment Minister, Michael Meacher, said that the U.S. policy to bully starving countries to accept GM foods was “wicked.”

Decision Point

African governments, NGOs, UN agencies, and donors each had decisions to make in the fall of 2002. To some degree, each group predicated its decisions in part on the other groups. NGOs, for instance, had to react to the parameters established by the local governments as well as by WFP and donors.

Overall, U.S. government authorities found it hard to understand why aid-needy countries would reject aid. In August 2002, USAID Administrator Natsios offered the government of Zambia to sponsor a team of Zambian scientists to visit the United States to research the technical issues. A small group of Zambian scientists did tour the United States, the United Kingdom, the Netherlands, Brussels, Norway and South Africa, with support from the United States and several European countries. Their report to the Zambian government was a disappointment to USAID, which had been convinced that they would agree that GM foods were safe. They did not. In their meetings with scientists in Europe, they found enough evidence to support their fears about GM that they advised the Zambian government to pursue an approach of caution.

The U.S. government asked the World Health Organization (WHO) to convene a summit to communicate to African ministers of health that GM foods were safe. WHO and the Food and Agriculture Organization (FAO)

declared in August and October 2002 that fears of health problems from GM foods were unwarranted:

“Based on national information from a variety of sources and current scientific knowledge, FAO, WHO and WFP hold the view that the consumption of foods containing GM’s [sic] now being provided as food aid in southern Africa is not likely to present human health risk. Therefore, these foods may be eaten. The Organizations confirm that to date they are not aware of scientifically documented cases in which the consumption of these foods has had negative human health effects.”⁴¹

It is unclear whether these UN statements had much effect on the decisions taken in southern Africa. For those seeking justification for their concerns, there were other credible and independent medical organizations that gave seemingly contradictory advice, cautioning that the health effects of GM foods remained unknown.

Throughout 2002 and 2003, the WFP had the largest responsibility and flexibility in managing the complicated movements of food between ports and countries, and ultimately from Zambia back out to Malawi.

Overall, food aid was delivered, though months after it was supposed to have been. Delays in the Zambian decision-making process and the need to mill most GM maize forced WFP to store large quantities of grains in port silos, affecting the through-flow of commodi-

ties into the region.⁴² The U.S. government reportedly offered non-GM wheat or rice, but these offers were declined in favor of the commodity of choice in the region, maize. The U.S. government reportedly also tried to source non-GM maize, but U.S. farmers said that they could not guarantee that the maize was GM-free.⁴³

All of the governments with declared food emergencies except Zambia agreed to accept GM maize, most with the condition that the maize be milled before distribution so that it could not be planted. Unlike whole grain maize, the maize flour cannot be used as seed or cross-fertilize with local seeds (whether accidentally or intentionally). Of course, milled grain has a shorter shelf life than whole grain. These governmental decisions reflected a commercial response to the concerns of European buyers of Zimbabwean and Malawian agricultural products that no GM seed get into the soil and affect these products. These decisions effectively allowed over 200,000 metric tons of P.L. 480 food into these countries in recent months, subject to a milling policy.

Malawi: In the end, Malawi, recognizing that its own milling abilities were inadequate, permitted distribution of most of the GM imports even without milling, so long as some fraction was milled. By 2003 most of the GM food aid for Malawi was accepted in milled form. In reality, Malawi did not have the infrastructure

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in place through para-statals (quasi-government agricultural agencies) to mill the amount of food aid that was entering. The government of Malawi, for example, said it would pay for the milling, but it did not have the money to do so. WFP indicated its willingness to step in and pay, but the para-statal mills could not mill quickly enough. An estimated 10 percent of the grain was milled by the existing capacity in Malawi. According to OCHA, “the Government’s decision to mill GM maize starting from November this year might have impact on the timely distribution of humanitarian aid.” OCHA also reported that the food shortage “exacerbated the incidence of children at risk of exploitation, child labor, and violence.”

Zimbabwe: Zimbabwe, a former grain basket for the region, had greater milling capacity than Malawi. WFP and partners contracted local milling companies in Zimbabwe’s two largest cities, Harare (its capital) and Bulawayo in the west, to do the milling before distribution, but the demand also required that both WFP and C-SAFE mill externally for Zimbabwe in order to comply with the milling requirement.

Zambia: The government of Zambia made a final decision in October 2002 that GM foods would not be allowed into the country. The pipeline broke down first in August when the government established testing and certification of food aid at border stations. It took some

time before donors made arrangements to address the shortages caused by the GM shut-down. The problems over GM caused about a four-month delay in the arrival of food aid to Zambia. With very limited private funds, some relief organizations bought food in Zambia, but this addressed only a small part of the Zambians’ needs.⁴⁴

In late fall and early winter 2002, the pipeline of food aid became erratic in Zambia. In the hardest hit sections of the country, people ran out of staples. Relief organizations reported that some people began depending on wild fruits whose safety was unknown, spending six hours a day gathering such sustenance in the bush while food aid was not delivered. Some people reportedly gathered roots from the bottom of swamps for nourishment. The government also stopped shipments from coming in at the border that tested positive for GM in any minimal way, preventing the entry of shipments with even 1 percent GM. Testing and certification at border stations started creating logistics backlogs. While the assistance pipeline was empty, hardships increased, and in January 2003 a mob of 6,000 hungry villagers in one rural town overpowered an armed policeman to loot a storehouse filled with U.S. corn before it could be taken out of the country.

The U.S. government represented a significant part of the pipeline – 75 percent. The European donors did not react quickly to the problems caused by the GM issue. In Novem-

ber, the United States made special efforts to arrange for sorghum (with which Zambians are familiar) and bulgur wheat as non-GM replacements for maize. This special pipeline of alternatives started arriving in February 2003. Ultimately, the United States brought in non-GM sorghum and bulgur wheat and shifted the maize to other countries in the region, and funds arrived from the European donors for the purchase of non-GM food aid. Of the 30,000 metric tons of U.S. GM maize brought in by WFP, about half was distributed before the GM crisis hit. In 2003, WFP moved 18,000 tons from up country to Lusaka and on to Malawi under heavy guard.⁴⁵

As the food crisis passed, it became apparent that enough food was already in the region to meet needs, and that lives were not lost due to the delays related to GM foods. As aid agencies transitioned their aid programs from emergency rations to targeted rehabilitation, much of the food remained similar, and the policies of Malawi, Zimbabwe and Mozambique that required milling of the food remained in place. They remained in place in 2004 going into another potential bad drought and food shortage crisis that includes South Africa.

Aftermath of the relief effort

By late 2003, the GM food aid question had disappeared from public debate. A short-term remedy was in place in southern Africa, aid to India had taken new directions and the media

was no longer interested in asking whether aid agencies should be finding alternatives to GM food aid.

But much of the reason the issue had left the headlines was because aid agencies, including WFP, were avoiding public attention in the hopes that the many governments which had not yet made decisions about GM food aid (like Zambia in the spring of 2002) would not be reminded of the question. This may be one reason why WFP's major evaluation of its response in southern Africa, dubbed the "Real Time Evaluation" because the evaluation began early in the relief effort, barely mentioned GM issues. WFP clearly knew that GM was a more important issue in southern Africa, and a more controversial challenge to WFP's leadership among aid agencies, than the report indicated. And the report deftly made no mention of the broader implications of GM because WFP knew this report would be made public and it did not want other governments to see WFP acknowledge on paper a wider, global question at stake.

Yet, without international attention, an increasing number of food-recipient countries are taking positions against GM foods. In May 2003, the GM food aid controversy came to a head again, when the Sudan government notified WFP that it would require food aid to be certified free of GM content. The new policy again caught WFP off guard, and resulted in 2,800 metric tons of U.S. food aid stuck in

In May 2003, the GM food aid controversy came to a head again, when the Sudan government notified WFP that it would require food aid to be certified free of GM content.

UN agencies in general remained slow to show leadership on GM disputes or concerns.

Port Sudan, with another 33,000 metric tons already in the Sudan. After a strong U.S. protest, the Sudan government made an exception, granting WFP a six-month waiver to distribute foods already in the pipeline. While a long-term resolution has yet to be negotiated, the Sudan government has shown its willingness to agree to more waivers for emergency purposes.⁴⁶

In addition, Angola quietly notified aid agencies that it had new regulations prohibiting GM food imports, though it also said it would waive these restrictions for food aid for the foreseeable future.

UN agencies in general remained slow to show leadership on GM disputes or concerns. UNICEF sought to play no role, nor did OCHA or the UN Secretariat. WFP intentionally downplayed the issue. WHO had not acted since mid-2002 and was showing little leadership, though with FAO it convened a meeting in November 2003 on methods to assess risks from GM animals.⁴⁷

WFP has moved to increase its tracking of GM disputes worldwide, though quietly so as not to increase the apprehension or attention of governments to GM food aid. In February 2004, WFP was to propose a new policy on GM food aid to its governing (inter-governmental) board. WFP acknowledges that it is not its role to mandate the import policies of recipient governments. WFP now requires its field staff to keep abreast of evolving national legislations related to GM food.

In many cases, NGOs felt caught in the middle of a senseless posturing match between the U.S. and local governments. Since many NGOs were dependent on WFP for much of their food pipeline, some were dismayed that WFP did not react quickly to the situation and were disturbed that WFP seemed more linked to USAID than to the need on the ground.

While NGOs have moved to develop their positions, policies and procedures with regard to GM food issues, they have done so quietly and, in many cases, without public publication. The main concern of the humanitarian organizations responsible for the delivery of food aid with regard to GM food was to meet the needs of those experiencing food shortages. In general, these organizations did not have any problem with distributing GM food, or any specific policies pro or con. Their policies, of course, were to respect the government's decision on this issue.

CRS, one of the principal NGOs responsible for distributing food aid in southern Africa, took this stand: respect the right of the host country to make decisions as to what food is appropriate for its population, as well as the right of partners in communities to decide what food to accept, but in a humanitarian emergency try to find the best way to serve the people in need. This typified the NGO approach to the GM food aid issue, as well as WFP's.

World Vision International concluded its "Position on the Use of Food Grains Contain-

ing GMOs in Emergencies” in November 2002, acknowledging and respecting various points of view and then asserting:

“Where a population is at imminent risk of mortality or morbidity due to acute food shortage, the humanitarian principle demands that the first priority is saving life. Not using GMO food now would result in real higher mortality/morbidity [death and disease] today. ... World Vision uses food grain donations that include GM foods in instances in which 1) hunger is life threatening, 2) sufficient alternative food aid is not readily available, and 3) receiving governments approve of its use. Use of food grains containing GM foods is done in accordance with local laws and Biosafety regulations. World Vision takes precautions, particularly through local education and monitoring at the household level, to ensure that GMO affected grains distributed as food aid do not become part of the long-term agricultural process.”

CARE published a lengthy technical report⁴⁸ examining the ramifications of GM food production, and – for internal use only – CARE has a three-page guidance for its staff explaining that CARE complies with the regulatory frameworks of both donor and receiving countries and, as well, CARE follows Sphere guidelines on food aid which, among other things, asserts the humanitarian imperative of giving priority to saving lives with all available resources.

Save the Children, a major U.S. food aid provider, acknowledges in its policy that pub-

lic debate about the pros and cons of GM products remain inconclusive. On the hinge issue of U.S. PL 480 food aid, Save the Children concludes in its policy that “it is in the best interest of the children and families who participate in our programs that we accept donations of U.S. produced commodities from the U.S. government, some of which are likely to contain or be GMOs.”

No NGO that has been a cooperating partner to USAID on food aid has turned down food aid because of GM concerns.

Recommendations

The following recommendations are addressed both to operational agencies and to donors and government policy makers involved in humanitarian relief.

- 1. Humanitarian aid organizations should acknowledge that recipient government GMO policies can and often do pose problems for delivery of humanitarian food assistance. Furthermore, aid agencies should recognize that national debates about the acceptance or importation of GM supplies have not peaked or plateaued, but will increase in complexity in the future.**

Perhaps because the problems associated with GM food aid have received so much press coverage, a surprising number of aid

agencies have sought to sweep the issue under the rug and downplay it in their reports. Numerous evaluations of the southern African crisis focus instead on drought and HIV/AIDS and avoid any mention of GM foods. Few NGOs have publicized their GM pipeline experiences or their new policy positions on GM foods, or acknowledged the difficulties in southern Africa in their annual reports.⁴⁹ Similarly, the barriers to GM food aid in India, Sudan and other countries have received little attention within the humanitarian aid community, having been left to a small circle of food aid managers.

The WFP's internal evaluation of their work in southern Africa gives the impression that GM food issues were resolved without too much trouble or impact. And in WFP's "management response" to its evaluation, no mention of GM food is made.⁵⁰ The main statements published by the U.S. government, other donors, and the WHO are in the form of fact sheets that attempt to reduce GM food debates to core scientific principles, giving less attention to popular consumer concerns and political stakes. USAID's 2003 review of how to streamline food aid operations under Food for Peace⁵¹ also did not mention GM food issues.

Failing to acknowledge the controversy has not reduced aid agencies' vulnerability to

being unprepared in the future should national policies again collide with international aid efforts.

2. It is essential that the GM food issues be researched and discussed by qualified, independent authorities.

Information is a part of the problem and cannot wait for disaster to strike. We would recommend that an international panel of neutral scientific experts be formed to examine this issue. The panel should consist of respected scientists from all over the world, including those from countries and regions that experience food emergencies. The findings of this panel should then be the basis of national discussions on this issue. The bottom line is that governments receiving food aid, donors providing it, and international organizations and NGOs distributing it must ensure that a reasoned discussion of these issues occurs and that the public understands the facts. National policies should be developed and adopted in a careful manner as soon as possible.

Reasoned discussion should inform WHO, FAO and UNEP reports on GM products that will consider safety as well as food security, social and ethical aspects, access and capacity building.⁵² Such reporting can contribute to a sound dialogue on GM food aid issues.

3. Humanitarian aid donors should be more open to local purchase and other options that better serve the interests of recipient communities. In the case of the United States, Congress should approve a significant share of the food aid budget (PL 480) to be in the form of cash to permit purchase of food aid for humanitarian purposes from the region where food aid will be provided. As an emergency response, third-country monetizations, triangular transactions and swaps also should be options.

Relief agencies have understood the advantages of local purchase since the 1980s: food can be brought to the target population in weeks as opposed to months, it can be less expensive since there is no ocean freight, and it stimulates the local economy, providing both encouragement for local farmers to intensify their production of basic staples and passing hard currency through the economy, where it passes hands stimulating support industries. Even though the Office of U.S. Foreign Disaster Assistance demonstrated the strength of local purchase in Ethiopia and the Sudan in the 1980s,⁵³ the U.S. government is relatively limited in its ability to invest in local purchase. The main food aid account

that the United States works with, Public Law 480, stipulates that the appropriated funds be spent buying and processing food strictly within the United States.

Not bound by decades-old U.S. law, the European Commission has moved to fill the gap in local purchase. For example, from 2000 to 2003 it conducted extensive, pivotal local purchase to mitigate famine both in southern Africa and Ethiopia. Despite the European Commission's increasing practice of buying foods within the region, the lion's share of food relief still comes in the form of imported foods, largely from the United States. If the United States had the flexibility to do local purchase, the delays and problems caused by GM food could have been significantly mitigated.

Monetizing (selling) food aid in a neighboring country (third country monetization) and then purchasing surplus regional foods for transport to the emergency region can be a fast and effective way to obtain the foods needed in relief. Triangular transactions are when food is exchanged in another country, whereas a swap is any exchange of one commodity for another. The Canadian FoodGrains Bank overcame its problems with GM foods by swapping its grain in South Africa and delivering South African grain to Zambia in 2002.

4. Where GM food controversies are likely, donors should be prepared early to provide alternate, non-GM foods from commodities they have available. As an example, the United States and Canada can prepare to provide low-cost sorghum and bulgur wheat in lieu of GM maize.

The overall effect of providing alternate foods may, in many cases, be higher cost or fewer kilocalories of food aid delivered. Food for Peace now has considerable room for deciding which foods can be substituted for different locations. Sorghum is the lowest-cost alternative that could be programmed effectively in much of sub-Saharan Africa. In other parts of the world, wheat would be the next least expensive and commonly accepted staple food for use in emergency rations.

Because wheat costs 50 to 100 percent more than maize in the United States, moving to this kind of alternative has a large impact on the total amount of nutritional value that can be donated as humanitarian aid within the fixed budget that the U.S. Congress appropriates.⁵⁴ While the procurement (purchase) cost in the United States and Canada of wheat is significantly above that of maize, the total cost of providing wheat is not so much higher, be-

cause the ocean freight, insurance, handling, internal transport, storage and administrative costs are virtually identical. In emergency relief efforts, the transport costs (particularly inland transport), which vary enormously, can be as high as ten times the procurement cost of the food. More often, as in southern Africa, the freight, transport, handling and administrative costs are roughly on par with the cost of the food, around \$150 per metric ton on top of the procurement cost. Southern Africa is similar to other parts of Africa and Asia in that the ocean freight is far (compared to say Haiti, Latin America or the Balkans) and the internal transport is difficult for reaching land-locked countries.

The total cost therefore of procurement plus transport/handling/administration of maize versus wheat in an emergency like southern Africa would be roughly \$250 versus \$325 per metric ton. Thus, for a fixed budget, maize provides roughly 30 percent more food (primarily kilocalories) than wheat. Or, to put it another way, 30 percent fewer people can be fed (or saved) by switching to wheat from maize.

In place of the blended foods, all of which contain GM soy, the U.S. government could build on the example demonstrated in southern Africa of milling grains into

flour and fortifying them locally. This achieves the important objective of providing micronutrients (if dosing equipment is added in the milling process), which are often provided primarily through the blended foods. By milling food close to the point of distribution, the shelf-life of food is extended; otherwise, processed foods and flours often spoil, particularly in emergencies and in humid environments.

- 5. NGOs should be more forthcoming with their positions on GM foods. As in the case of World Vision, an NGO policy does not need to articulate a view either favorable to or against GM technology; it can focus instead on recognizing and respecting concerns and need for more information by local authorities. One option aid agencies have considered was whether to adopt a policy of “take it or leave it” to governments concerned about GM foods. This might be a policy some NGOs or WFP may want to adopt. It would be more difficult if this policy were imposed on the NGO by its donors, putting its long-term programs in the country at risk for policies the NGO inherits and is seen to enforce but does not agree with.**

Currently, most NGO policies about GM foods remain internal to the organization and have not been made public. This reflects three things. First, within many of these NGOs there is a difference of opinion among staff and offices. For example, in some NGOs, their European branches are more opposed to the GM foods than their American branches. Second, the NGO feels anxious about the backlash from either local authorities or from donors to any policy that has an edge to it, which takes a critical stand. Third, aid agencies fear that publicizing the issue of GM food aid may instigate a debate about it in countries where it is currently not on the government’s agenda. While each of these concerns inhibits NGOs from clarifying their role in the chain of distribution, the ongoing play of GM disputes will eventually require NGOs to do so. When Consortium for Southern Africa Food Security Emergency (C-SAFE) began, the USAID’s proposed Cooperative Agreement included language stating that C-SAFE agreed that GM food was safe. The C-SAFE NGOs objected to this provision and had it taken out. It is reasonable for NGOs to avoid having their positions dictated to them by a donor. But in turn, NGOs can articulate interim positions, such as a view that in delivering humanitarian food aid, they are neither

seeking to promote GM technology nor seeking to sneak GM foods into countries unbidden.

The most recent version of the Sphere humanitarian charter and minimum standards includes guidance stating that foods should be as appropriate as possible to local circumstances and cautions against the use of GM foods. Those NGOs dependent on food aid from the United States and Canada will however have a hard time reconciling that guidance with the current GM character of their food aid.

6. **Humanitarian aid agencies should analyze and make public their conclusions about the likely effects on foreign aid of GM wheat entering into commercial production. If GM wheat is grown in great quantity, like GM maize, it is likely to dramatically restrict the flexibility of aid agencies in providing humanitarian food assistance. It is already evident that many countries would seek to block imports of GM wheat. If GM wheat were to be disseminated throughout U.S. and Canadian food production without being segregated, it would dramatically hinder aid agencies from delivering volumes of inexpensive staple foods at an affordable cost.**

If both American maize and American wheat were blocked by the increasing numbers of developing countries instituting prohibitions against GM imports, U.S. food aid (PL 480) programs would be forced to change from what they have been since the 1960s. Currently, wheat (including varieties such as bulgur) is a main backup to (or substitute for) maize in food aid. The two together represent 80 percent of the kilocalories (life saving energy) provided in U.S. food aid. It would be difficult to fulfill current food programming needs, including emergency rations in disasters, famines and refugee crises, with sorghum and rice, the other grains available. Wheat and maize are the two least expensive, most widely accepted culturally, and most abundant crops that the United States has had to offer.

Monsanto's new variety of GM wheat would have been made available to U.S. and Canadian farmers already except for the public concerns expressed by farm associations that wide-scale conversion to GM wheat would lead to the closure of overseas markets for U.S. exports, costing American farmers tens of billions of dollars. Nevertheless, Monsanto has projected the wide-scale release of GM wheat for 2005.

Looking long term, NGOs can inform Congress and the administration of the

likely consequences of new forms of GM food aid, for example, if GM wheat is produced and offered as food aid. NGOs have lobbied Congress for years in promotion of food aid, in alliance with U.S. farm lobbies.

U.S. NGOs delivering GM humanitarian aid have preferred to stay clear of the controversies engendered by GM food aid. Preferring to leave the lobbying, regulation and politics to politicians, they have tried not to be associated with either side of the debate between donor and recipient governments. Without taking a side, NGOs can still play an important role by communicating to U.S. regulators and lawmakers the implications for the effectiveness of humanitarian aid of further conversion of food aid to GM food aid.

The U.S. Congress has not played an active role in framing regulations for GM products, in comparison to the FDA, USDA and the Environmental Protection Agency (EPA). But as GM products proliferate, diversify and grow more and more substantially different from the original products, the standard FDA approach to simply comparing GM products with original products will prove logically insufficient.

Moreover, the Clinton White House instructed the FDA and USDA to not base

regulatory decisions on economic or political considerations, but instead to focus strictly on health and environmental harm. Thus, as currently structured, regulatory decisions in the United States cannot weigh considerations such as the potential loss of international markets to U.S. farmers, or the loss of effectiveness of foreign humanitarian aid. Therefore, it will be proper and necessary for Congress to play the role of taking into account the economic, business and social concerns expressed by producers and consumers. Civil society, including humanitarian aid NGOs, have both a right and a duty to inform their Congressional representatives about their own experiences and observations about the consequences of the increase in GM products into formerly GM-free markets.

7. Aid agencies should develop an early warning capability to anticipate where national GM concerns may lead to obstacles that impede food aid pipelines.

WFP, NGOs and donors should create and maintain a database that tracks risk factors that predict where and when GM controversies may arise. Such a database should build on the framework proposed by Robert Paarlberg, among others. Based on lessons thus far, a database should flag countries by the following risk factors:

- Signatories to the Cartagena Biosafety Convention.⁵⁵
- Countries that have directly signaled to WFP their concern about GM foods.
- Countries where local activism generates concern about GM food.
- Countries that have not yet been widely exposed to GM seed opportunities.
- Countries where the regulatory and approval process for food consumption, production, drugs and imports have been particularly weak and have not yet been able to frame preliminary policy on GM (in general, regulatory frameworks are more advanced in those countries that have had their own GM research the longest).⁵⁶
- Countries that are periodically subject to food crises.
- Countries that have, have had or look forward to having significant exports of basic foodstuffs to European and Japanese markets. Zambia has this trait.
- Countries whose government seeks an excuse to embarrass or lodge complaints against the United States, for the sake of it (as in the Sudan example).
- Countries for whom trade (and aid) bans are useful tools in broader political moves to incite nationalism for political gain. Factions in India used this, as did the government of Zimbabwe.

A critical part of ongoing early warning analysis should look at the evolving relationship between markets that export to Europe and European regional and national regulations and supermarket decisions regarding GM imports.

Among other things, international NGOs can pay attention to the role of indigenous NGOs, consumer groups, advocacy networks and think tanks that can play a pivotal role in making policy debates national.

It may not be sufficient, and could give the wrong political appearance, to expect a government, with vested interests, to be solely responsible for aggregating data on GM food aid positions and policies worldwide. In 2002, USAID was asked by USDA to create a watch list of potential GM hotspots, a request that led to negative publicity.

USAID's biotechnology office, oriented toward environmental issues, in the Economic Growth and Agriculture Department (EGAD) Bureau met in 2003 with NGOs to coordinate lessons from GM food aid experiences and to attempt to achieve a monitoring system via a network. This network was convened again in February 2004 to share global experiences.

WFP and large NGOs such as CARE and World Vision would be well served to develop their own in-house databases on GM and similar market-related policy issues that can influence their aid programs. Because World Vision and CARE have offices in almost all developing countries, it should cost them little to cull local information and insights. One entity that

already specializes in tracking risk factors and country characteristics is the FEWS.Net project.⁵⁷ USAID has not directed it to track GM issues. But because FEWS.Net is a technical information service that serves the donor and implementing communities, it would be well-placed to house a common database.

8. International food aid donors should address one of the reasons why GM concerns were not readily resolved: the relative lack of regulatory and monitoring mechanisms in poorer countries.

The World Bank and regional development banks can support new regulatory frameworks that track GM usage and contamination across agricultural fields. USAID should fund, and NGOs should assist with, test sites in recipient countries to determine how much food aid in fact was used as seed in Zimbabwe and Malawi, and how much (if any) pollen and wind contamination of other crops occur.

Along the same lines, donors can lend support to inter-state discussions that lead to informed and harmonized regulation of GM and related products. In southern Africa, COMESA and SADC⁵⁸ are preparing regional approaches to GM products.

NGO aid can help countries apply current science to track GM exposure.⁵⁹ In

post-crisis settings, NGOs have often become directly involved with aiding local ministries and bureaus in building their capacity and in implementing such activities as border quarantine stations.

A 2003 Conference in South Africa revealed great desire by local scientists, agronomists and policy makers to learn more, to network and share information, and to find ways to put their national PhDs to work in analyzing GM foods.⁶⁰

9. Aid agencies should find ways to meet the documentation requirements of recipient nations, even if said documentation simply states that “some foods may contain an unknown portion of GM ingredients” that distinguishes those items from others that are known to contain no GM ingredients.

The requests by African countries to have food aid labeled as to its GM contents are consistent with the existing regulations of the Japanese,⁶¹ the EU and other countries.

In fact, the USDA is already leading a process of helping U.S. NGOs meet these standards, to provide new documentation in the context of broader efforts to streamline food safety checking that countries implement differently. The United States is attempting to avoid delays of food ex-

ports by becoming more transparent about its food safety regulations.⁶²

Much of this effort is guided by an examination of how nations are gradually developing national regulations to implement the Cartagena Protocol on Biosafety, to which the United States is not a signatory (but Canada is). The Cartagena Protocol focuses on improving information exchange between countries in order for decisions to be made to assess the safety of imported products prior to trade (“trans-boundary movements”) occurring. NGOs therefore need to add to current documentation about what foods contain LMOs and also document that the food aid is for “direct use,” that is consumption, and not for seeds or other economic downstream purposes.

10. Together, recipient and donor governments should formally consider whether there ought to be a principle, that in projected famine emergencies, national regulations on food imports should permit on an exceptional basis all forms of life-saving international food aid delivery.

The fact that some donors invoke such a norm while others do not recognize it suggests that fundamental assumptions about ethics in emergencies have been insuffi-

ciently deliberated. The position espoused by the U.S. government to Zambia and Zimbabwe in 2002 implied that such a humanitarian principle (or norm or ethic) exists and that it must be self-evident. It is reasonable for the U.S. government to propose such a moral imperative: that there are circumstances in which emergency action should override local laws and regulatory codes. But if this principle or norm ought to exist then it needs to be seriously considered by the community of nations and be agreed upon by governments and stakeholders.

The Tampere Convention provides an example of a global standard of emergency telecommunications which, among other things, exempts aid agencies from onerous local regulations that would impede emergency relief. If food aid is to benefit from a similar convention or principle, there must be some inter-governmental consensus.

An opposing model applies for essential drug supplies in emergencies, where WHO and NGOs have agreed to not import emergency pharmaceuticals that are inconsistent with the “Essential Drug Lists” established by the national Ministry of Health. Although aid agencies often violate this principle in small ways (there being so many different kinds of drugs do-

nated to NGOs), they generally honor it both in practice and in published standards.⁶³ The issue at hand with Essential Drug Lists is not whether governments differ or disagree about whether some drugs are safe. Instead the regulation aims to maintain a coherent national regulatory regime that, among other things, prevents the spread of drug-resistant strains of disease in the country. This is similar to the interest of some countries to control or prevent the spread of new types of agricultural products in their country which, once spread, can't be easily cut back.

A third angle on the debate is the emerging ethics of experimentation and research in humanitarian emergencies. For years, aid agencies viewed ethical considerations as a luxury in emergencies, but in the last decade aid representatives have come to recognize the importance of principles such as protecting informed consent when conducting research during an emergency. Many recipients of GM food may feel as though they are treated like guinea pigs, testing a product otherwise not accepted in their culture.

WFP and WHO together would be well-positioned to convene such a discussion through its annual convening of government (member) representatives. OCHA could also propose the convening of a

working group under the UN Secretariat, either through Ecosoc or, to start, with interested nations. Any working group should include a balance of donor governments and recipient governments.

11. NGOs would benefit from a deeper understanding of market dynamics, trade policy, economics and macroeconomics. While still working from the ground up, NGOs also need to understand the interplay of trade policy, national plans for economic growth and the patterns of risk and vulnerability among marginalized populations. Among other things, this will give NGOs a leg up on anticipating which forms of aid will or will not be allowed.

Understanding the evolving trade interests and trade protection concerns of each country is one step in understanding both how it may react to GM food imports and how interested it will be in new GM seeds for production. In any case, NGOs should become more sophisticated in understanding macroeconomic aspects of development and broaden their focus beyond the local project scale.

CARE has undertaken an internal review of its reading of international and domestic market forces in its aid programs. In the 1990s, NGOs took a step in this di-

rection when ramping up their monetization programs, requiring them to examine local markets and identify patterns of existing trade and major traders.

12. Fortification can and should be provided inexpensively in even large-scale emergencies at local milling sites. This was demonstrated in the 2002-2003 southern African response by milling in South Africa, Zimbabwe and Malawi.

The Micronutrient Initiative of Canada and the GAIN initiative in Geneva have both promoted the proposition that more developing country foods can be fortified. Using the same premix of 20 essential vitamins and minerals used in the United States, aid agencies can inexpensively fortify emergency grains at the point where they are milled from whole grains into flour, at the country level. Milling as close to the point of distribution as possible reduces costs (fortification is less expensive than in the United States) and reduces spoilage, because flour will spoil sooner than a whole grain.

Until now, aid agencies have been slow to adopt field-level fortification in large part because the scale of the operation was daunting to NGOs and because – except for the Canadian government – donors did not provide funding. Based on the south-

ern African demonstration, donors should provide the funding necessary for the dosing equipment, the fortificant, and level of effort. In fact, WFP and C-SAFE should make it standard operating practice.

13. NGOs and donors should respond early with volumes of seeds. Seeds and tools promote long-term livelihood, achieve dietary diversification, and can mitigate food crises by shifting more agricultural production into drought-tolerant crops.

Aid in the form of appropriate seeds was lost in the debate. Prior to the GM food aid controversy, most of the major donors and NGOs had been actively engaged in promoting locally appropriate, drought-resistant, livelihood-diversifying seeds to small farmers. USAID had been proud of its early emphasis on provision of seeds in Malawi and Mozambique.

In its review of the southern African food crisis, the British House of Commons concluded, “We believe that the open-pollinated varieties which require few inputs and which farmers can store and re-use, are more appropriate for poor smallholder farmers than hybrid and genetically-engineered varieties which require annual re-purchase and could tie poor farmers into costly relationships with powerful transnational seed companies.”⁶⁴

14. Aid agencies should have cash reserves to allow for rapid and flexible responses to emergencies including those discussed in these recommendations. Institutional donors, including foundations, should consider assisting NGOs with the establishment of such emergency reserves.

The political nature of GM food means that humanitarian operations must be prepared ahead of time with rapidly available alternatives for when abrupt political decisions are taken that block normal aid. More funding should come in a form that can be used to purchase food that governments will accept. To make funds stretch as far as possible, food can be purchased as close to the affected areas as possible. But parties involved should be cognizant of the possibility that such food aid may at times be more expensive per capita than GM food aid and confront that trade-off honestly. At the end of the day, the humanitarian responsibility is clear – people in need must be reached.

The entire food aid industry, in the United States authorized by PL 480 legislation, tends to be driven by in-kind availability of commodities, with little cash provided. NGOs do not, as a matter of habit, draw on other cash accounts for their food aid

programs, except as necessary to cover transport and administration. As a result, this recommendation requires a significant change in mindset.

In order to quickly move to local purchase or alternative food pipelines, some cash is required. In Zambia, CARE was able to make up some of the food gap caused by the GM disputes by buying food regionally with an emergency cash fund it had granted to it from the Bill and Melinda Gates Foundation. This type of grant proved particularly efficient and appropriate.

15. Donors and aid agencies should approach GM food aid issues with considerable diplomacy. Vocabulary affects government reactions. The experience in southern Africa suggests that language that sounds threatening or denigrating can worsen the problem by creating animosity, impeding negotiations and further slowing the delivery of aid.

In southern Africa, as in India, a large part of the GM food aid debate is driven by nationalist pride and, particularly in Zimbabwe, is a statement against neocolonialism and globalization. The international response, particularly initial U.S. comments, fueled perceptions that GM food aid served paternalistic interests of wealthier

countries. Even a moderate view, such as U.S. Secretary of State Colin Powell's statement in Johannesburg, 2002, that GM foods were good enough for Americans, sounded patronizing to many Africans.⁶⁵

In addition to avoiding inflammatory language, aid agencies might also avoid sweeping generalizations that are then open to dispute. When U.S. government representatives claim that GM foods are totally safe, they are trying to make a point (that they appear to be mostly safe) with an extreme and obviously biased assertion that cannot be proven. Instead, explaining the regula-

tory logic that GM foods are substantially the same, molecule for molecule, enzyme for enzyme, as traditional foods, the basis for U.S. regulations, would be more candid and helpful. The best approach is to provide the most accurate scientific information available. As Britain's former development minister, Clare Short, said, "We take the view under the Cartagena Convention, the biodiversity convention, that every country has the right to decide for itself whether to import GM food or seeds and needs the capacity to be able to think about it and make the decision in an intelligent way."⁶⁶

TABLE 1. TIMELINE OF GM FOOD AID CONTROVERSY IN SOUTHERN AFRICA

Time		Southern African Situation	S. African Governments	Donors	Aid Agencies
1992		Regional food shortage	Unprecedented appeal for aid and coordination	Unprecedented delivery of food aid	Delivered food across a dozen countries
1996		Continued monocropping of maize	Liberalizing agricultural policies	Small amounts of development food aid provided	Gradual expansion of development aid
1997		Poverty and HIV/AIDS increases in region South Africa begins production of GM food		U.S. and Canadian food aid gradually becomes GM	Begin to deliver GM food aid
2000		Zimbabwe's agricultural production decreases fast	DFID begins to discontinue its fertilizer subsidy to farmers in Malawi	Donors support range of NGO-led development projects	WFP programs in region dwindle
2001			Zimbabwe rejects GM food aid in December	Relatively unaware of potential GM issues	NGOs begin to notice early signs of famine
2002	Jan-May	Insufficient rainfall results in spring maize harvest well below normal	Request for aid; no indication of concerns about GM	Rapid response putting food aid, some of it GM, on freighters to Africa	
2002	June	Large food shortage predicted	Zambia says GM food aid poses no problem	U.S. Embassy confirms GM food is okay with Zambian government	Oxfam UK calls for a moratorium on the use of GM food aid
2002	July	International appeals made		Donors commit food aid to region	NGOs create food aid coordinating mechanisms
2002	August	Setup of RIACSO emergency coordinating office in region UN says millions on edge of survival and sees race against time for food aid to arrive	Zimbabwe, Zambia and Malawi register positions against GM food aid	USAID Administrator tries to negotiate GM solution with heads of state WHO and FAO asked to take clear stand certifying GM food	WFP told by GRZ not to distribute GM whole grain maize already in Zambia
2002	September	Food aid pipelines begin to become operational	Zambia declares ban on all imports of GM foods	GM food aid dispute intensifies between U.S. and African government officials	NGOs begin formulating their own GM policies
2002	October	Coping strategies observed by populations	Zambia confirms its final decision to prohibit GM food		
2002	November	Food surpluses in Mozambique, Tanzania and South Africa tapped	Governments work with WFP and NGOs to ramp up milling	Alternative foods for Zimbabwe shipped by Food for Peace	NGOs unable to meet food delivery obligations
2003	January/February	Food riots in Zambia to get at GM foods in storage		U.S. donated sorghum and bulgur wheat arrive in Zambia	NGOs criticize WFP in Zambia for its handling of GM problems GM food in Zambia moved to Malawi
2003	March/April			Donors shift to reconstruction	Milled grain distributed in large quantities
2003	Summer/Fall	Region appears to be recovering from crisis	Requirements for milling GM food continues as before		WFP begins tracking governments on GM

ACRONYMS AND SHORT DEFINITIONS

ACDI/VOCA	U.S. NGO: Agricultural Cooperative Development International
allergenicity	property of some proteins (incl. GM-derived) to cause severe allergies in people
APHIS	Animal and Plant Health Inspection Service, a part of USDA
Bt	a gene added to corn, cotton, and potatoes derived from <i>Bacillus thuringiensis</i>
bulgur	a variety of wheat that has been parboiled (pre-cooked) and ground, common in aid
Cartagena	shorthand for the Cartagena (Colombia) International Protocol on Biosafety
CBD	International Convention on Biological Diversity, under the UN Environment Prog.
CIDA	Canadian International Development Agency
Codex	Codex Alimentarius, body of codes regulating international food safety
corn	The U.S. word for maize
CPB	Cartagena Protocol on Biosafety to the Convention on Biological Diversity
CRS	Catholic Relief Services, one of the largest humanitarian aid NGOs in the United States
C-SAFE	Consortium for Southern Africa Food Security Emergency
CSB	Corn Soy Blend, a U.S. aid food that includes corn flour and soy extract
DNA	Deoxyribonucleic Acid
EC	The European Commission, the Executive arm of the European Union
EGAD	USAID Bureau of Economic Growth and Agricultural Development
EU	The European Union
FAO	U.N. Food and Agriculture Organization
FDA	U.S. Food and Drug Administration
FEWS	Famine Early Warning System, a USAID sponsored Project
FFP	Food for Peace, a program and an office of USAID
GE	Genetically Engineered (means the same thing as GM)
glyphosate	the herbicide that kills fungus infections
GM	Genetically Modified, when genes from a species are added to a different species
GMO	Genetically Modified Organism, used to refer to GM foods, plants and animals
Golden Rice	GM rice with augmented level of vitamin A
GRZ	Government of the Republic of Zambia
HT	Herbicide-tolerant crops, a form of GM
LMO	Living Modified Organism
Maize	The international everyday word for what Americans call corn
MT	Metric Ton
OPV	Open-Pollinated Variety of crop
out-crossing	Transfer of DNA from GM to non-GM plants through natural biology in fields
PL480	U.S. Federal Public Law #480
SADC	The Southern African Development Community
StarLink	GM maize variety that was approved in the U.S. only as animal feed
toxicity	A compound's capacity for killing organisms
transgenic	Same as GM
Ultra Rice	Specially prepared rice kernels with extra vitamin A added, not a GM crop
USDA	U.S. Department of Agriculture
USAID	U.S. Agency for International Development
WFP	World Food Programme, the UN's food aid delivery agency, based in Rome
WHO	World Health Organization, the UN's health agency, based in Geneva
WTO	World Trade Organization, the inter-govt. association for harmonizing trade rules

Endnotes

1. Steven Hansch, Andrew Schoenholtz, Alisa Beyninson, Justin Brown, and Don Krumm. In addition to published information, this report is based on interviews and other forms of information exchange conducted by the study team with key informants in southern Africa and elsewhere.
2. See Arturo Warman, *Corn and Capitalism: How a Botanical Bastard Grew to Global Dominance*, University of Carolina Press, 2003.
3. Three hundred years after potatoes were introduced into Europe, the crop was attacked by a blight disease (*Phytophthora infestans*) which killed some 2 million Irish in the 1845-1846 "potato famine."
4. See Per Pinstrup-Andersen and Ebbe Schioler, *Seeds of Contention: World Hunger and the Global Controversy over GM Crops*, Johns Hopkins University Press, 2000.
5. Genetic engineering goes by various names, roughly synonyms describing the same thing, including gene manipulation, gene cloning, recombinant DNA technology, genetic modification, transgenic modifications, biotech, etc. See Desmond Nichol, *An Introduction to Genetic Engineering*, Second Edition, Cambridge University Press, 2002.
6. Cargill has long been one of the U.S.'s largest private holdings. On January 27, 2004, Cargill announced a merger with IMC Global (fertilizer company) that would make it a publicly traded company, allowing it to raise capital and opening up information for the first time about Cargill's global food empire.
7. Brewster Keen, *Invisible Giant: Cargill and its Transnational Strategies*, Pluto Press, 2002.
8. Many U.S. medical professionals, accustomed to the extensive and often onerous testing requirements imposed by the FDA on new drugs, find it hard to understand why foods are exempt from any similar testing when new proteins and enzymes are introduced to foods and consumed by Americans.
9. In 1998, the U.S. exported 3 million bushels to the EU, down from 70 million in 1997. Kathleen Hart, *Eating in the Dark: America's Experiment with Genetically Engineered Food*, Vintage Books, 2003.
10. The Pew Initiative on Food and Biotechnology, April 30, 2003.
11. "Europe Prepares for Strict Labeling Laws on Genetically Modified Food," *The New Scientist*, July 12, 2003.
12. Vandana Shiva, *Stolen Harvest: the Hijacking of the Global Food Supply*, South End Press, 2000.
13. C. Ford Runge and Benjamin Senauer make this argument in their widely sold book, *Ending Hunger in Our Lifetime: Food Security and Globalization*, Johns Hopkins University Press, 2003.
14. From controlled trials, public health officials demonstrated in the late 1980s and early 1990s that small quantities of vitamin A given to millions of children in different countries can reduce the total child mortality rate by roughly 40 percent. Although it is known that vitamin A supports many biological processes, including the immune system, scientists cannot explain exactly why vitamin A has such a powerful healthy effect.
15. By the early 1900s, American maize production had swelled to 70 million tons of maize per year, far more than Americans could directly consume. Thereafter,

- America's food processing industry has sought ways to incorporate maize into new foods, as well as to feed cattle and poultry. Cornstarch was extracted from maize in 1844 by Colgate.
16. As a broad generalization, European NGOs have been vocal against GM foods on the international stage, whereas U.S. NGOs have been involved in distributing GM foods overseas.
 17. Variations on this theme appeared in many if not most foreign newspaper and web-press coverage. For example, http://www.kisanwatch.org/englanalysis/jun.03/an_formulate_policy.htm
 18. One Indian pundit wrote, "Should the country depend on food aid when its godowns (warehouses) are overflowing with 48 million tons of food-grains?" See Sudhirendar Sharma, "In Perspective – Why Get Food Aid When Stocks Rot," Deccan Herald of India, March 12, 2003.
 19. ACIDI/VOCA Food for Development, *Genetically Modified Food: Implications for U.S. Food Aid Programs*, pp. 10-11, April 2003, available at ACIDI/VOCA's website www.acdivoca.org
 20. Both U.S. Senator Christopher Bond and the director of the Donald Danforth Plant Science Center had also traveled to meet with Indian officials.
 21. StarLink – spliced with a gene deadly to the corn borer pest – had been approved in the United States for animal feed but not for human consumption due to concerns it might cause allergic reactions.
 22. StarLink's pest-repelling toxin introduces complex proteins that might possibly pose a health risk for humans, such as allergies. After it was found that StarLink corn had slipped into some 300 different human foods, Starlink was withdrawn from production in 2000.
 23. O. Manda, "Controversy rages over 'GM' food aid," *Africa Recovery*, Vol. 16 #4, February 2003, p. 5.
 24. ACIDI/VOCA Food for Development, *Genetically Modified Food: Implications for U.S. Food Aid Programs*, p. 6,17, April 2003. About one-third of U.S. maize contains GM; the percentage is higher for soybeans, while U.S. wheat does not contain GM.
 25. Michigan State University found that while the programs did stimulate production among small and remotely rural farmers, it was not an efficient intervention from the government's point of view, and these maize subsidies were rolled back, under liberalization, in the 1990s. See Julie Howard, *Zambia's Stop and Go Revolution: the Impact of Policies and Organizations on the Development and Spread of Hybrid Maize*, USAID Bureau for Africa Policy Synthesis, 1996.
 26. Wisdom Mdzungairi, "No to GM Food Aid," *The Herald* (Harare), Sept. 2, 2002.
 27. News24.com, "South Africa's Lonely Stance on GM Crops," *The Campaign*.
 28. Gilian Farquhar, "South Africa: Genetically Engineered Crops Ready for Harvest," April 13, 1999 (Inter Press Service).
 29. Africabio, "South African Biotechnology," available at www.africabio.com/policies/biotechsa.shtml
 30. UN OCHA, UN Consolidated Inter-Agency Appeal in Response to the Humanitarian Crisis in Southern Africa – Zambia, July 18, 2002, p. 27, available at <http://www.reliefweb.int/appeals/2003/files/zam03.pdf> (last visited August 4, 2003).
 31. *Ibid.* at p. 11.
 32. UN OCHA, *Update Regional Strategy for Crisis in Southern Africa 2003*, November 19, 2002, p. 1, available at <http://www.reliefweb.int/appeals/2003/files/saf03.pdf>

33. FEWS Bulletin, September 29, 1998, available at www.fews.org/fb980929/sa980929.html#ZA (last visited August 5, 2003).
34. UN OCHA, *Update Regional Strategy for Crisis in Southern Africa 2003*, November 19, 2002, p. 5, available at www.reliefweb.int/appeals/2003/files/saf03.pdf (last visited August 5, 2003); Stephen Clapp, "WHO Denies Report of Emergency Meeting to Discuss Biotech Food Aid," *Food Chemical News*, August 26, 2002, p. 9.
35. "Zambia Remains Firm Against GM-Maize Aid," South Bulletin 41, http://www.southcentre.org/info/southbulletin/bulletin41/bulletin41-10.htm#P398_75670
36. *Ibid.* at pp. 9-10.
37. UN OCHA, *Southern Africa: Mid-Term Review 2003*, February 14, 2003, p. 2, available at <http://www.reliefweb.int/appeals/2003/files/safmtr.pdf>
38. Philip Pardey (ed.), *The Future of Food: Biotechnology Markets and Policies in an International Setting*, International Food Policy Research Institute, 2001.
39. Delegates from 20 African Countries to the UN Food and Agriculture Organization meeting on Plant Genetic Resources.
40. Transcript from a CRS Press Conference, December 13, 2002.
41. Joint Statement of the Directors-General of FAO and WHO and of the Executive Director of WFP, "United Nations Statement Regarding the use of GM Foods as Food Aid in Southern Africa," August 23, 2002. In November 2002, WHO issued a first-ever document on GM food questions titled "20 Questions on Genetically Modified (GM) Foods," www.who.int/foodsafety/publications/biotech/20questions
42. *Ibid.*
43. John Vidal, "U.S. accused of dumping unsold GM food on Africa," *The Guardian* (London), October 7, 2002.
44. Catholic Relief Services, for example, purchased 500 metric tons at a cost of \$235 per ton.
45. Simon Robinson, "To Eat or Not to Eat," *Time Europe*, December 2, 2002.
46. Office of U.S. Foreign Disaster Assistance, "Sudan – Complex Emergency – Situation Report #1, Fiscal Year (FY) 2004," November 14, 2003.
47. A joint FAO/WHO expert consultation on the safety assessment of foods derived from genetically modified animals, including fish, was held at FAO from November 17-21, 2003; see http://www.who.int/foodsafety/biotech/meetings/ec_nov2003/en/
48. Avtar Kaul, "CARE and Genetically Modified Organisms," Status Report, 2001.
49. ACDI/VOCA's survey of the GM food aid issue observes that "when asked about their position on GM food, PVOs (NGOs) had mixed responses....GM food is accepted because the PVOs are not in a position to demand non-genetically modified food from USAID and USDA. One respondent stated 'by not having a policy, we have a policy since we are still handling GM food aid.'"
50. The "Summary of Evaluation Recommendations and Management Response – Real-time Evaluation of WFP's Response to the Southern Africa Crisis, 2002-2003 (EMOP 10200.0)" is an Information Note published by WFP in October 2003 for its annual Executive Board session. It addresses eight categories of management issues, including targeting, assessment, monitoring of food and staffing. It does not mention GM foods or the controversies or operational problems related to them.
51. The report, "Title II Streamlining: Opportunities for Improvement," July 2003,

- by Cathy Silverstein and Dan Shaughnessy, commissioned by the USAID Office of Food for Peace, never mentions operational problems associated with GM. It does address delays in emergency food aid.
52. WHO, "20 Questions on Genetically Modified (GM) Foods," Answer to Question 20, p. 8, <http://www.who.int/foodsafety/publications/biotech/20questions/en/>
 53. Pioneered by aid expert Fred Cuny who also wrote about local purchase in his textbook with Rick Hill, *Famine, Conflict and Response: A Basic Guide*, Kumarian Press, 1999.
 54. In the U.S., Congress annually makes an appropriation in dollar terms. USAID and USDA then, working with NGOs and WFP, have to figure out how to spend these dollars in a manner to meet various objectives, one of which is to provide the most aid to the most in need, using the least expensive foods available.
 55. There are actually two categories: countries that have signed, and countries that have ratified. South Africa signed but has not ratified, for instance. Both groups are relevant to this analysis. The Cartagena Protocol on Biosafety of January 29, 2000, a supplementary agreement to the Convention on Biological Diversity, establishes an advance informed agreement (AIA) procedure for ensuring that countries get the information necessary to make informed decisions on the import of LMOS into their territory. The Protocol also establishes a Biosafety Clearinghouse to facilitate the exchange of information of LMOs and to assist implementation. The Protocol applies to the transboundary movement, transit, handling and use of all LMOs that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health; see <http://www.biodiv.org/biosafety/protocol.asp>
 56. For example, South Africa, Zimbabwe and Malawi have more advanced frameworks, whereas Tanzania, Botswana, Lesotho, Swaziland, Mozambique, Angola and the Seychelles have the most incomplete guidelines.
 57. Administered by USAID and currently implemented by Chemonics. FEWS.Net was created specifically to forecast famine in sub-Saharan Africa but now has been expanded to other continents as well.
 58. SADC created its Advisory Committee on Biotechnology in 2003 to look at policies, legislation and regulations toward the goal of each member nation having biotechnology legislation passed by 2004.
 59. For example, the EU makes available technical guidance at www.euro.who.int/eprise/main/WHO/Progs/FOS/Assistance/20030728_1
 60. FANRPAN & IFPRI Regional Policy Dialogue on Biotechnology, Agriculture and Food Security in Southern Africa, held at Senators Hotel, Johannesburg, South Africa, April 25-27, 2003.
 61. From April 2001 on, Japan mandates GM labeling for 24 types of whole and semi-processed foods made from corn and soybeans.
 62. USDA information about imports of meat, poultry, and egg products is available at www.usda.gov/mission/fs.htm, while information about other food products and feed is available from the FDA at www.cfsan.fda.gov/list.html
 63. The new 2004 NGO Sphere minimum standards clearly establish that NGOs should follow the lead of the host government to define which drugs are to be imported and given, and which should not be.

64. "Humanitarian Crisis in Southern Africa: Government Response to the Committee's Third Report of Session 2002-03, Ordered by the House of Commons" HC 690, published May 15, 2003, London.
65. Austine Mbozi, writing in the Sept. 16 Post, reacted in anger to Powell's remarks: "Whether Americans eat GM food or not is not our issue. Our issue is that we do not know how safe it is, just like Americans also do not know how safe it is. Can Powell agree to eat kanunka, chikaanda, *Mbeba*, or *Hopani* foods just because the Tonga, Bemba, Ngoni, or Lozi peoples respectively have been eating them? No. Then why should we eat GM [foods] just because Americans (if any) have been eating them?"
66. The International Development Committee of the British Parliament also acknowledged its obligation, as a signatory to the Cartagena Protocol on Biosafety, "to respect the right of aid-dependent governments to refuse genetically-modified commodities if these are offered as food aid."