

Paper Title: HIV/AIDS, Food Insecurity, and Genetically Modified Food Aid in Southern Africa: Seeking Common Ground Solutions through a Commitment to Peace, Justice and Sustainability

Author(s): Brenton, Barrett P.

Institutional Affiliation(s): Associate Professor of Anthropology, Department of Sociology & Anthropology, St. John's University, Queens, NY, U.S.A.

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Paper Abstract:

The recent drought and need for emergency food assistance in southern Africa is unlike similar crises that have emerged in the past. The impact of HIV/AIDS has exacerbated the problem to catastrophic proportions, creating a new variant of famine. A missing generation of productive parents is emerging as they die from HIV/AIDS, leaving grandparents and children burdened with the responsibility of food crop production. This has led to declines in the area of land planted, crop yields, agricultural knowledge, and household labor. Worsening regional economies and political uncertainty have added to the dilemma. Genetically modified maize as an emergency relief food has also become a paramount concern for countries like Zambia, who do not want it to contaminate local food production and taint export markets that demand genetically modified free foods. This is placed in contrast to the U.S Government's condemnation of countries limiting their acceptance of genetically modified relief food when people are near starvation. One solution with limited success has been to mill the maize before distribution so that it cannot be planted and have its altered genome spread into local crops. Rather than condemn countries for limiting their acceptance of genetically modified relief food, the crisis must be approached with an integrated perspective that deals simultaneously with HIV/AIDS, malnutrition, food insecurity, and concerns over food and crop safety. This paper will present current research on the coordination of responses to the unfolding food and health crises in southern Africa by international faith-based and secularly-oriented organizations, with a focus on the situation in Zambia. It will suggest how a broader approach to disease must integrate perspectives of peace, justice and sustainability in order to promote common ground solutions based in religious motivation and the use of appropriate scientific interventions. Finally, the paper confronts and challenges the assumption that there is a moral imperative to use biotechnology in order to meet the world's food needs.

Author Bio(s):

Barrett Brenton, broadly trained as a Biocultural Anthropologist: B.A. University of Nebraska-Lincoln; M.A./Ph.D. University of Massachusetts-Amherst, is currently an Associate Professor of Anthropology, a Research Fellow for the Vincentian Center for Church and Society, and a Faculty Coordinator for the Local Societies Initiative: Roundtable on Religion, Science, and Social Justice at St. John's University. His primary specialty is the anthropology of food and health. Dr. Brenton's cross-cultural and global applied research experience has included work in South America, Southern and Eastern

Africa, Western Europe, and in Native American communities across the U.S. He has published widely in these areas, with some of his most recent publications including: associate editor for the 3 volume *Encyclopedia of Food & Culture*; co-editor of *Global Perspectives on Complementary and Alternative Medicine*; and a contributor on food policy issues to the *Oxford Encyclopedia of American Food and Drink*. In addition, he is co-editor of the international journal *Ecology of Food and Nutrition*, and is Past-President of the Society for the Anthropology of Food and Nutrition, a section of the American Anthropological Association.

Paper Text:

Ongoing droughts and need for emergency food assistance in southern Africa are unlike similar crises that have emerged in the past. The impact of the HIV/AIDS pandemic has exacerbated the problem to catastrophic proportions, creating what some have referred to as a new variant of famine. In Zambia for example it is estimated that at least one in five adults are HIV positive. In addition Zambia's life expectancy has dropped from a high of 52 years of age in 1980 to an estimated 37 years in 2005. A missing generation of productive parents is emerging as they die from HIV/AIDS, leaving orphans, grandparents and vulnerable children burdened with the responsibility of food crop production. Their deaths along with others debilitated by the progression of various disease-states has led to declines in the area of land planted, crop yields, agricultural knowledge, and household labor. All told, over 30% of Zambian children are malnourished. In addition, worsening regional economies and political uncertainty have exacerbated an already deteriorating food security situation. This stark reality sets the backdrop for issues facing many of the peoples of Sub-Saharan Africa, and begins to reveal both the need and challenge of seeking common ground solutions through a commitment to peace, justice and sustainability.

Increasingly, HIV/AIDS food security issues have been complicated by the resistance of some countries to genetically modified organisms (GMOs) or genetically modified (GM) foods. A case in point is the refusal of GM maize as an emergency relief food for countries like Zambia, who do not want it to contaminate local food production and taint export markets that demand genetically modified free foods. They also have concerns related to food safety, the environment, and sustainability. These paramount trepidations are not taken lightly by many Zambians who struggled with the decision to resist GM maize and soy imports from the U.S. during a severe food shortage in 2002-2003. The consequence of their actions however, elaborated in greater detail below, must be placed in contradistinction to the U.S government's condemnation of countries limiting their acceptance of genetically modified relief food when people are near, or at least claimed to be near starvation. This view has evolved over time into the declaration that it is a moral imperative to use biotechnology to feed the world, a view actively promoted by pro-GM multinational corporations.

The United States' "take it or leave it" stance and outright promotion of the biotechnology industry through GM food aid, which some could argue has now become repackaged as a moral imperative, was made especially clear when the U.S. Agency for International Development (USAID) would not budge on a compromise to send non-GM food aid or to mill it before shipping.¹ If maize is milled before distribution it cannot be

¹ <http://www.agbioworld.org/biotech-info/articles/biotech-art/usaaid.html>

planted, as would be the case with whole kernel maize, and therefore could not have its altered genome spread into local crops. This milling solution had only limited success during the 2002-2003 crisis since USAID refused to send milled maize, stating that the process was too costly and would lead to too great of loss during transport. It was only used as a final resort for Zimbabwe, who accepted GM food aid after the cost and act of processing were provided by the South African milling industry. Zambia continued to reject any form of GM food aid.

Rather than condemn countries for limiting their acceptance of genetically modified relief food, I argue that the crisis must be approached with an integrated perspective that deals simultaneously with HIV/AIDS, malnutrition, food insecurity, and concerns over GM food safety. The following will review and outline current research on the coordination of responses to the unfolding food and health crises in southern Africa by international faith-based and secularly-oriented organizations, with a focus on the situation in Zambia. Particular attention will be given to views expressed by the Zambian-based Jesuit Center for Theological Reflection (JCTR) and Kasisi Agricultural Training Centre (KATC) who have been vocal critics of the use of GMOs. In short their arguments are based in Catholic social thought. I also hope to show that a broader 'holistic' approach to disease must integrate perspectives of peace, justice and sustainability in order to promote common ground solutions based in religious motivation and the use of appropriate scientific interventions. To do so we must strive to confront and challenge the assumption that there is a moral imperative to use biotechnology in order to meet the world's food needs.

Ongoing Debates Surrounding Biotechnology, GMOs and World Hunger

The following table presents an outline of the current debate on biotechnology, GMOs and World Hunger. It is not meant to be an exhaustive compilation of views but should give the reader some sense of the lines that have been drawn and others that are rather unclear or intentionally blurred. There are strong anti-GMO positions around the globe. However, many people in the developing world are ambivalent, cautious, or unknowledgeable about the issue. I would argue that the same is true for most Americans. We have not had the benefit of much open public debate about the issue. We are told in part that it is deemed safe by various federal regulatory agencies and that is all there is to it.

For developing nations, any concerns are dismissed as being unscientific, based on the limited knowledge of decision makers, and/or under the influence of developed nations (the European Union in particular) or environmental activist groups (Friends of the Earth, Greenpeace, etc.) who have an anti-GMO agenda. The strong and often terse paternalistic tone used toward or against the developing world that resist GMOs rings of an unsettling neo-colonial enterprise for many in the formerly colonized nations of Africa and Asia. This is compounded by a proselytizing moralistic dimension that is not often fully or thoughtfully articulated in cross-cultural contexts of morality or religious tradition.

Excerpts of a speech given by U.S. President Bush on May 21, 2003 in New London, CT are very informative and clear about the U.S. government's position on GM foods.

We can also greatly reduce the long-term problem of hunger in Africa by applying the latest developments of science. I have proposed an Initiative to End Hunger in Africa. By widening the use of new high-yield bio-crops and unleashing the power of markets, we can dramatically increase agricultural productivity and feed more people across the continent.

Yet, our partners in Europe are impeding this effort. They have blocked all new bio-crops because of unfounded, unscientific fears. This has caused many African nations to avoid investing in biotechnologies, for fear their products will be shut out of European markets. European governments should join—not hinder—the great cause of ending hunger in Africa.

Table 1. Outline of Debate on Biotechnology, GMOs and World Hunger

<u>Pro-GMO Positions</u>	<u>Anti-GMO and/or Ambivalent Developing World Positions</u>
Biotechnology will feed the world, reducing and/or ending hunger in the future. A moral imperative?	Inequitable food distribution not inadequate food production is the problem; GMOs do not address this issue.
Reduction in crop loss from diseases, insects, and drought. Less need for pesticides & herbicides; environmentally friendly. Increased food security.	Environmental concerns: Impact on ecosystems. Threat to biodiversity. Pollution. Erosion of small-scale sustainable farming.
Increased food production. More affordable food. Increased food security.	Economic concerns: Loss of GM-free markets (EU & neighboring countries). Control by Multinational Corporations.
Safety concerns addressed by the promotion of in country Food Safety Boards and legislation.	Human health risks arising from new allergens, toxins, or other emergent biohazards. Little capacity to deal with assessing and managing GMO risks.
Improved nutritional content of traditional foods.	Mono-cropping and loss of food and nutrient variety. Threats to sustainability.

As can be ascertained from Table 1., there is a complex interface of political, economic, cultural, and scientific factors contributing to views held about GM foods and

their production and use. The real concerns expressed can perhaps be boiled down to the most basic question of “why do people go hungry?” If it was just simply a matter of food production and morality, and not distribution, the problem may have been solved long ago. Unfortunately this is not the situation.

The Southern Africa Drought and Food Crisis of 2002-2003: The Zambian Case

Table 2. reviews a chronology of the series of events that unfolded during a food security crisis throughout southern Africa in 2002-2003. Particular attention is paid to the impact of the drought on maize production in the case of Zambia. The increasing importance and dominance of maize in Zambia over the past century has been a mixed blessing. It can be summarized as follows:

- Maize gained dominance over the traditional and often drought resistant sorghums and millets by the early-to-mid 20th century.
- The feeling for many Zambians is that you’ve not truly eaten meal until you’ve had maize meal or *sima* (a.k.a. *nshima*, *inshima*, *ugali*, mealie-meal).
- Breakfast meal (the finest flour) is preferred as more filling, but is more expensive. Some commercial brands are fortified to make up for the nutrients lost during the refining process.
- Roller-Milled meal (a coarser flour), is more nutritious and cheaper, but many Zambians feel that one has to eat more of it to feel full.
- The origin of a number of commercial maize products manufactured in Zambia and abroad also contributes to concerns over GM maize.
- The locally milled high energy protein supplement (HEPS), a partially pre-cooked flaked corn/soy blend, is now accepted as a food and has great potential for combating the nutritional dimensions of HIV/AIDS. Chronic malnutrition accelerates the progression of asymptomatic HIV to symptomatic HIV to full blown AIDS.

Table II. The Zambian Case 2002-2003 Chronology. Adapted from Hansch et al. (2004: 39)².

² Hansch Steven, Andrew Schoenholtz, Alisa Beyninson, Justin Brown, and Don Krumm. *Genetically Modified Food in the Southern African Food Crisis of 2002-2003*. Georgetown University, School of Foreign Service. Institute for the Study of International Migration. March 2004.

<u>Date</u>	<u>Events</u>
Jan-May 2002	-Spring maize harvest well below normal due to low rainfall. -Rapid response –some GM food aid on freighters to region.
June 2002	-Large food shortages predicted. -Zambian government is “O.K.” with GM food aid.
July 2002	-International appeals made for food aid. -WFP issues an Emergency Operation Plan (EMOP) targeted to the most vulnerable groups (HIV/AIDS, OVC).
August 2002	-UN/WFP announces that millions are on the edge of survival in southern Africa [The term famine is not used]. -Zambia registers position against GM food aid. JCTR role. -WFP told not to distribute whole grain GM maize already in Zambia. -USAID tries to negotiate a GM solution (milled maize). -WHO and FAO declare GM foods safe.
September 2002	-Food aid pipeline is operational in southern Africa. -Zambia declares ban on all imports of GM foods. -NGOs begin setting GM policies. -USAID-sponsored GM tour of Europe and U.S.
October 2002	-Coping strategies observed by populations –used to point out how dire the need for food aid is. -Zambia confirms its final decision on no GM foods, period.
November 2002	-NGOs unable to meet all food delivery obligations.
Jan-Feb 2003	-Reported skirmish in Zambia re: GM foods in storage. -U.S. non-GM sorghum and bulgar wheat arrive in Zambia. -GM maize food aid in Zambia moved to Malawi. -NGOs criticize WFP in Zambia for handling of GM issue. -Could they have foreseen the problem?
May-Sept 2003	-Region begins to be recovering from crisis -Bush administration begins criticism of EUs ban on GMOs as a contributing factor to famine in Africa.

Overall, the primary question of whether or not the problem of GM food aid could have been foreseen is still unanswered. However, it did force various aid agencies to make clear policy statements on its use. In short, most organizations have taken the position of following whatever mandates and policies the host governments have regarding GMOs in their country. They admit however that their relief efforts would be easier if GM food aid was not an issue. But this has to be put in to the context of a U.S. perspective on GMOs since it provides the majority of direct food aid worldwide and has taken its own “take it or leave it” stance on the issue.

Another concern is that in retrospect the extent of the crisis may have been exaggerated. Although no one suggested that a famine was happening it was made to appear eminent without large scale intervention. An independent report by Valid International in 2004³ criticized DEC (Disasters Emergency Committee), the umbrella group of organizations in the U.K., for having over stated the crises in terms of the threat of famine. Whether this was done to solicit an immediate response from donors or was simply a flaw in the monitoring system, or both, is unclear. However the report does state that “There was a clear distinction between how agencies presented the crisis internally and externally. The internal presentation dealt with the chronic nature of the crisis, but the external presentation was far more dramatic and simplistic.”⁴

The report also suggested the need to integrate the role of HIV/AIDS on food security issues in an area of the world where as many and one in three adults are HIV positive. Other criticisms have been made of the World Food Programme’s use of the USAID funded FEWS NET (Famine Early Warning System Network) for not paying enough attention to many nations’ own in-country assessments.

Before continuing any discussion of the GM food aid issue I have provided below some bullet points for reviewing and considering how the impact of HIV/AIDS further complicates any discussion related to its use.

HIV/AIDS and Food Insecurity

- Have HIV/AIDS created a new variant of famine?
 - A missing generation of productive parents is emerging as they die from HIV/AIDS, leaving grandparents and grandchildren.
 - They are left with the burden of food production.
 - Those debilitated by the progression of various disease-states are unable to work or have reduced work capacities.
 - This has led to declines in the area of land planted, crop yields, agricultural knowledge, and household labor.

³ Valid International. Independent Evaluation of the Disasters Emergency Committee’s Southern Africa Crisis Appeal, Volume 1: Main Report July 2002 to June 2003. January 2004.
http://www.dec.org.uk/uploads/documents/A_Stitch_in_Time_v103_Vol_1_-_Main_Report.pdf

⁴ Ibid. p.20.

- AIDS orphans (with and without HIV themselves) have placed an additional strain on families who take them in.
- Counter-Arguments to the proposed new variant of famine
 - Amount of land cultivated has not decreased (this data however may underestimate the importance of garden plots).
 - Livestock decimation by disease over the past 10 years along with periodic drought has eliminated many of the traditional coping strategies and ability to buffer recent food insecurity.
- Regardless of the combination of factors contributing to food insecurity it appears that resistance to GMO food aid has not significantly contributed to the problem.
- There is a real need for continued integrated programs that address the nutritional demands of fighting HIV/AIDS along with sustainable food security options that articulate with and are sensitive to the disease progression (e.g. C-SAFE, SUCCESS, RAPIDS).
- Efforts to date that include food supplementation have focused on patients receiving Anti-Retro-Viral Treatment (ARV/ART) or who are screened as symptomatic HIV+, People Living with HIV/AIDS (PLWHA), and Orphans and Vulnerable Children (OVC). These programs must be expanded to the family and community level (e.g. Bwafwano Community Organisation).

The following programs been implemented in Zambia on a small scale, but serve as models for larger scale programs in the future. Faith-based relief organizations are at the heart of these programs.

- **C-SAFE** = “Consortium for Southern Africa Food Security Emergency”
 - The consortium was a regional response to the 2002-2003 food security crisis in southern Africa, led regionally by three International NGO's - CARE, Catholic Relief Services (CRS) and World Vision (WV), with an additional member in Zambia - ADRA.
- **SUCCESS** = “Scaling Up Community Care for Social Safety Nets”
 - Initiated in the fall of 2003 this \$1.7 million/ 2 year project builds on existing strengths and partnerships in home-based care delivery. Run by Catholic Relief Services (CRS).
- **RAPIDS** = “Reaching HIV/AIDS Affected People with Integrated Development and Support.
 - Announced in January 2005, RAPIDS is an HIV/AIDS initiative funded under the U.S. President’s Emergency Plan for AIDS Relief in Zambia and is administered by USAID.
 - The RAPIDS Project, an NGO consortium effort, totaling US\$ 39 million over six years, is the single largest U.S. government funded project in Zambia for care and support of Orphans and Vulnerable Children (OVC) and People Living with HIV/AIDS (PLWHA).

- The NGO consortium partners are Africare, Catholic Relief Services (CRS), Expanded Church Response (ECR), Salvation Army, and World Vision.
- RAPIDS provides a unique blend of direct assistance (such as school fees, blankets, seeds, tools, medicines, care kits, food supplements, etc.) combined with the strengths of consortium partners in community mobilization and training.
- **BWAFWANO COMMUNITY HOME BASED CARE ORGANISATION**
 - The Bwafano (“helping one another”) incorporates several distinct programs that each provide medical care, HIV testing and counseling, psycho-social services, home-based care, income-generation programs to the community, and schooling.
 - Located on the outskirts of Lusaka, Bwafwano was started in 1996 as a response to the problems of poor healthcare and child-homelessness in a service community of over fifty-thousand people.
 - It is supported by USAID, UNICEF, and Catholic Relief Services (CRS).

I argue that regardless of the combination of factors contributing to food insecurity (poverty, drought, HIV/AIDS, etc) it appears that Zambian resistance to GM food aid has not significantly contributed to those problems. That said, the question of a moral imperative to use biotechnology to increase food security in the future must be put into the context of multiple options that are also available that will meet the same goal of increasing food security and feeding the world.

The following discussion revolves around views expressed by the Zambian-based Jesuit Center for Theological Reflection (JCTR) and the Kasisi Agricultural Training Centre (KATC), who have been vocal critics of the use of GMOs. They were heavily involved in debates that took place in Zambia regarding the use of GM food aid during the 2002-2003 crisis. In fact they were taken to task and chided for supposedly having had a role in influencing the Zambian government’s policy of no GMOs. They only wish that they could have such influence on government action. Their role has been to facilitate public discussion on the issue, and base their own arguments in Catholic social thought and teachings. As this debate unfolds it is clear that more open discussion of the nexus of religion, science and social justice must be facilitated.

JCTR, KATC and the Moral Imperative of Biotechnology Question

In August 2002 a research study sponsored by JCTR and KATC was released titled “What is the Impact of GMOs on Sustainable Agriculture in Zambia?”⁵ Its timing was amidst the ongoing discussions in Zambia about whether to accept or reject GM food aid. The degree to which it influenced public policy is still unclear, but not surprisingly

⁵ What Is the Impact of GMOs on Sustainable Agriculture in Zambia? A Research Study Sponsored by Sponsored by Kasisi Agricultural Training Centre and Jesuit Centre For Theological Reflection. August 2002. <http://www.jctr.org.zm/downloads/GMOreport.pdf>

there work has not been without criticism. A scathing report was issued in October 2002 titled “To Die or Not to Die this is the Problem...” by Andrew Apel *et al.*⁶ and the pro-GMO industry propaganda website Agbioworld. They accuse them of “Politics not Science,” “Tricks not Truths,” and misplaced Christian Priorities.”

A press release for the report quotes one of the authors, Professor Wayne Parrott, a plant geneticist at the University of Georgia, as follows: “Those of us who are Catholic fear that the Zambian Jesuits are squandering the reputation of the Church for goals that are political, not theological.”⁷ In addition Dr. Piero Morandini, a plant biology researcher at the University of Milan, Italy is quoted as saying: “The position taken by this Zambian theological group cannot be defended by science, nor is it supported by Judeo-Christian teachings. How can this group reject food aid, knowing that many Zambians could die of starvation without it?”⁸

These harsh statements and similar one’s made by GMO champion Peter Raven generally seem to treat politics, economics, and society as separate entities from the scientific process. One could make that argument in the lab (still with some trepidation) but not in the arena of public policy and the globalization of our food systems by multinational corporations.

Making no political apologies and finding the claims of starvation in Zambia with no GMOs to be absurd, an opportunity to meet their detractors was made available in a paper titled “The Church’s Social Teaching and the Ethics of GMOs,”⁹ presented by KATC father Roland Lesseps SJ and JCTR Father Peter Henriot SJ at the International Symposium on “Genetically Modified Organisms, Threat or Hope?,” held in Rome November 10-11, 2003. It was organized by the Pontifical Council for Justice and Peace and presided over by Council Prefect Cardinal Renato Martino. Their anti-GMO opinions and those of a few others were only invited to the conference after a criticism was made that it was too one sided (pro-GMO). It is important to note that the conference had been presented in the form of a question. The conclusions of their presentation were as follows:

- Theological and ethical concerns must be primary in any discussion promoted by church groups.
- Genetic modification does not meet the tests of the social teaching of the church for genuine integral development that respects human rights and the order of creation.
- The church has the responsibility to educate its members to the religious values essential in evaluating use of GMOs in agriculture.

⁶ To Die or Not To Die this is the Problem: Comments to the Kasisi Agricultural Training Centre and Jesuit Centre for Theological Reflection Study: What Is the Impact of GMOs on Sustainable Agriculture in Zambia? By Andrew Apel *et al.* October 2002.

http://www.Agbioworld.Org/Pdf/To_Die_Or_Not_To_Die.Pdf

⁷ <http://www.agbioworld.org/biotech-info/pr/jesuits.html>

⁸ Ibid.

⁹ <http://www.jctr.org.zm/publications/cst-gmos.htm>

- Political pressures should be brought by Justice and Peace groups across the world to promote non-GMO approaches to meeting problems of hunger.

They also fully articulate the importance of the Catholic Church's Social Teaching in addressing the GMO issue. They incorporate a detailed analysis of: Respect for human rights; Respect for the natural world; The common good; Option for the poor; Subsidiarity; and Solidarity as it relates to seeking alternatives to GM food.

A follow-up conference titled: "Feeding a Hungry World: The Moral Imperative of Biotechnology" was held on September 24, 2004 at the Pontifical Gregorian University in Rome. It was sponsored by the U.S. Embassy to the Holy See in cooperation with the Pontifical Academy of Sciences. The conference received corporate funding from Monsanto and other biotechnology industry giants. The difference in this conference however was that alternative opinions (anti-GMO) were not invited, and the conference title was not stated in the form of a question but more as an inevitable fact. Ironically, statements posted on www.agbioworld.org by Peter Raven were said to have been from a: "Speech given during the ongoing debates at the Vatican conference concerning genetically modified organisms."¹⁰ Little or no debate occurred at this one-sided venue.

In response to the planned conference JCTR issued a press release on September 20, 2004 titled "Serious Flaws in a Conference on Moral Imperative of Biotechnology,"¹¹ They highlight six flaws:

- 1) The most basic flaw is to realize that "the surest path toward elimination of hunger and malnutrition is to eliminate poverty and the unjust social structures that underlie it. These are the root causes of hunger, not lack of sufficient food production."
- 2) There is an absence in the conference programme of considering "proven methods to improve the nutritional status of the human family, methods that are better, cheaper, more sustainable, and more suitable for resource-poor farmers than are genetic engineered crops."
- 3) An "apparent absence of any mention of the serious scientific problems with genetic engineering."
- 4) "The design of the conference seems to be a total absence in the programme of any mention of the many failures of genetically engineered crops."
- 5) There "appears to be a lack of value-oriented socio-economic analysis of the impact of GMO farming on the livelihood of the small-scale farmer."

¹⁰ <http://www.agbioworld.org/biotech-info/religion/peter-raven.html>

¹¹ <http://www.jctr.org.zm/publications/presrel200904.htm>

6) “To be honest, how is it possible to examine with full intellectual vigour such an important topic without voices that hold contrary views to those espousing biotechnology as the solution to the world’s hunger problems?”

Their concluding statement hits directly at the core of what is missing in the debate when they state: “To make our own point of view quite clear, we state: *there is certainly a moral imperative to feed our hungry world, but there is no moral imperative to do so with biotechnology*” [Emphasis theirs].¹²

Concluding Remarks for Further Discussion

In short they are calling, as am I, for discussion that actively integrates a religion, science, and social justice framework. I argue that a broader and more holistic approach to disease must integrate perspectives of peace, justice and sustainability in order to promote common ground solutions based in religious motivation and the use of appropriate scientific interventions. I challenge each of us to confront the assumption that there is a moral imperative to use biotechnology in order to meet the world’s food needs. Clearly the polarization of scientific dogma and religious dogma does not produce an affective platform for mobilizing change. The current crisis in Zambia must be met with respect for national decision making while seeking social justice by addressing the underlying structural reasons for poverty, hunger, and disease around the world.

¹² <http://www.jctr.org.zm/publications/presrel200904.htm>