***** Inherency 3**
----Biotech that has been developed is not useful for Africa 3
---Status Quo GM crops are not useful for African farmers. The tech must be adapted 3
----Africa lacks access to biotech. US is key to remedying this deficiency 4
----No compulsory license provisions in patent law. Biotech firms are not oblige to license their tech 5
----Patents chill agricultural biotech research on African staple crops 5
----Restrictive patents undermines public sector development of biotech for humanitarian purposes 6
----Corporate control of agricultural biotech prevents it use by small-scale African farmers 6
----Public research organizations are forced to work in isolation. The lack of data from private firms impairs their ability to navigate the regulatory and commercialization processes 7
***** Harms 8**
----Food Aid will not solve African food insecurity 8
----30% can not afford a diet with a minimum caloric intake 8
----Hunger is increasing in Africa 8
----A quarter of a billion people are at risk. Increasing the yield of Maize solves 9
----Food insecurity threatens to collapse African states and spread war, economic destitution, and disease outbreaks across the continent 9
***** Solvency 10**
----US is the world leader in biotech 10
----There are many scientist standing ready to research biotech targeted at Africa however, fear of patent litigation chills their innovation- plan solves this 10
----African scientific advancements will snowball. They will quickly build on small steps of innovation 11
***** GM Crops Safe 12**
----Transgenics increase food safety 12
----History is on our side on this question. US consumption proves that there are few food safety concerns 12
----No substantiated evidence for their claim that biotech has harmful health consequences 13
---- All the world's leading academies argue that GM is safe 13
----30 years and millions of experiments disprove your impact 13
----The best science is on our side 14
----The UN's Food and Agriculture Organization sides with us 14
----Non-unique: Asia will drive the growth of GM Foods 15
----Non-Unique – China is increasing biotech production 15
----China's adoption will be modeled 15
----53% of the world's population lives in countries that approves biotech crops 16
----Global adoption now… US, Brazil, EU 16
----Adoption of the technology is booming in other parts of the world 16
----Expansive use of GMOs in the US and all six continents empirically denies your claim 17
----Ewen and Pusztai research is methodologically bankrupt 17

***** Help African Economy 19**
----GM Foods will jumpstart Africa's economy and prevent future food crises 19
----GM crops will stabilize economies. Drought will collapse agriculture-based economies. 20
----The use of GM crops raises the standard of living for subsistence farmers. The 2nd wave of crops will be developed to meet the unique needs of these farmers 20
***** Topicality - Public Health 24**
----A paradigm shift has happen. Food insecurity is now considered a public health issue 24
----Food biotechnology is a public health issue 24
----Food is an essential public health issue (T) 24
----Food insecurity is a public health issue. It is a determinant of health 24
***** Topicality - Government to Government 25**
----The majority of agriculture research in Africa is done by public institutions. The plan is Government- to-Government 25
***** Topicality - USAID 26**
----Agriculture plays a central role in USAID's development strategy 26

*** Inherency

----Biotech that has been developed is not useful for Africa

Pardey, Koo & Nottenburg 2004
(Professor of Science and Technology Policy @ University of Minnesota, Research Fellow @ International Food Policy Research Institute, & Principal of Cougar Patent Law [Philip G. Pardey, Bonwoo Koo & Carol Nottenburg, "Creating, Protecting, and Using Crop Biotechnologies Worldwide in an Era of Intellectual Property," Minnesota Journal of Law, Science & Technology, December, 2004, 6 Minn. J.L. Sci. & Tech. 213]edlee

Historically, there have been large spillovers of improved varieties and the technology and know-how embodied in them from one country to another. However, we cannot presume that the rich countries of the world will play the same roles as in the past. 143 In particular, countries that in the past relied on technological spillovers from the North may no longer have that luxury available to them in the same ways or to the same extent. 144 This change can be seen as involving three elements. First, the types of technologies being developed in the rich countries may no longer be as readily applicable to less-developed countries as they were in the past. The agenda in richer countries is shifting away from areas like yield improvement in major crops to other crop characteristics and even to non-agricultural issues. 145 Second, the private presence in rich country agricultural research and development has increased and many biotech companies are not as interested in developing technologies for many less-developed country applications. Even where they have such technologies available, often they are not interested in pursuing potential [*251] markets in less developed countries. 146 And third, those technologies that are applicable and available are likely to require more substantial local development and adaptation, calling for more sophisticated and extensive forms of scientific research and development than in the past. For instance, more advanced skills in modern biotechnology or conventional breeding may be required to take advantage of enabling technologies or simply to make use of less-finished lines that require additional work to tailor them to local production environments. 147 In short, different approaches may have to be devised to make it possible for less-developed countries to achieve equivalent access to technological potentials generated by rich countries. In many instances, less-developed countries may have to extend their own research and development efforts to more fundamental areas of the science.

---Status Quo GM crops are not useful for African farmers. The tech must be adapted

Kelemu et al 03
(Centro Internacional de Agricultura Tropical (CIAT) [Segenet Kelemu, George Mahuku (Centro Internacional de Agricultura Tropical), Martin Fregene (Centro Internacional de Agricultura Tropical), Douglas Pachico (Centro Internacional de Agricultura Tropical), Nancy Johnson (Centro Internacional de Agricultura Tropical), Lee Calvert (Centro Internacional de Agricultura Tropical), Idupulapati Rao (Centro Internacional de Agricultura Tropical) , Robin Buruchara (Kawanda Agricultural Research Institute), Tilahun Amede (African Highland Initiative), Paul Kimani (Professor of Agriculture and Veterinary Sciences @ University of Nairobi), Roger Kirkby (Kawanda Agricultural Research Institute), Susan Kaaria (Kawanda Agricultural Research Institute), Kwasi Ampofo (Agricultural Technology Development and Transfer Project) "Harmonizing the agricultural biotechnology debate for the benefit of African farmers," African Journal of Biotechnology Vol. 2 (11), pp. 394-416, November 2003]edlee

The currently available and widely commercialized GM traits are not good examples of technologies that will help resource-poor farmers. Most small African farmers cannot afford herbicides or pay high premiums for purchasing GM seeds. Available GM crops are not designed for poor African farmers and it is doubtful that large agricultural companies will ever design crops exclusively for the benefit of poor African farmers. African scientists, international agricultural research centres (IARCs) and other players need to join forces to tackle the specific problems that African farmers face. For specific major agricultural constraints where no conventional methods are currently available to solve them, Africans, instead of shying away, should turn to agricultural biotechnology as another potential source of solutions. Several agricultural biotechnology initiatives are tackling constraints of importance to Africa. UNECA (2002) reports on ongoing plant biotechnology activities in several African countries; and Walter S. Alhassan (2003) describes those for West and Central Africa. Pg. 402-3

----Africa lacks access to biotech. US is key to remedying this deficiency

Kowalski 02

(JD @ University of California at Davis [Tara Kowalski, "International Patent Rights and Biotechnology: Should the United States Promote Technology Transfer to Developing Countries?," Loyola of Los Angeles International & Comparative Law Review, Winter 2002, 25 Loy. L.A. Int'l & Comp. L. Rev. 41]edlee

III. Statistics on Developing Countries' Access to Biotechnology

Developing countries currently lack sufficient access to biotechnology in two respects. First, they do not have an adequate quantity of biotechnology to address their needs. Second, developed countries, which conduct most biotechnology research and development (R&D), create products for developed markets. Therefore, most current biotechnology does not address problems that are unique to developing countries.

The United States is currently the world leader in both the production and consumption of biotechnology. 24 U.S. international patent filings demonstrate its dominance in the area of biotechnology R&D. 25 In the first half of the 1990s, the United States held priority of 63% of international biotechnology patents and 59% of the most highly cited biotechnology inventions. 26 Federal grants and private industry are the two primary sources of funding for biotechnology R&D in the United States. The United States provides more funding for biotechnology R&D than any other government in the world. Additionally, the private sector spends $ 18 billion a year on biotechnology R&D. 27

[*46] The disparity in access to biotechnology is illustrated by the global distribution of GM crops. Between 1996 and 2000, developed countries grew 85% of GM crops. 28 Although developed countries possess most of the global GM crops, developing countries' share of GM crops has been steadily increasing. For example, from 1997 to 2000, developing countries' share of GM crops increased from 14 to 24%. 29

Despite increasing ownership, developing countries still lack access to a majority of GM crops. In 2000, thirteen countries grew GM crops - eight developed countries and five developing countries. 30 The United States, Canada, Argentina and China grew 99% of the global GM crop area. 31 Of these countries, the United States grew 68% of the global GM crop area. 32 Argentina, Canada, and China grew 23%, 33 7%, and 1%, respectively. 34 These statistics demonstrate that most developing countries continue to lack access to GM crops.

Since developed countries dominate biotechnology R&D, most biotechnology advances do not address the needs of developing countries. For example, most GM crops are not staple foods, like rice and cassava, in developing countries. 35 Rather, GM crops, like corn and cotton, are better suited for the U.S. and European markets. 36 In fact, the four major GM crops grown globally are soybean, corn, canola, and cotton. 37 Soybean, the leading GM crop, constituted 58% of the global area of GM crops in 2000. 38 In addition, most GM crops are genetically modified to increase crop yields in temperate zones, such as Europe and the United States. 39 Developing countries, however, need biotechnology advances that are adapted to their native environments. The technology should be geared to increase crop [*47] yields in tropical and desert zones and engineered to be drought-resistant, tolerable of saline soils and resistant to native diseases and pests. 40

----No compulsory license provisions in patent law. Biotech firms are not oblige to license their tech

Trudell 05
(06 JD Candidate @ Syracuse University College of Law [Robert H. Trudell, "FOOD SECURITY EMERGENCIES AND THE POWER OF EMINENT DOMAIN: A DOMESTIC LEGAL TOOL TO TREAT A GLOBAL PROBLEM," Syracuse Journal of International Law and Commerce, Fall 2005, 33 Syracuse J. Int'l L. & Com. 277]edlee

2. Compulsory Licenses to Use Patented Technology
The phenomenon of compulsory licensing of intellectual property rights is not an unknown legal tool. There are statutory requirements for compulsory licenses for inventions which serve the public interest, such as provisions within the Clean Air Act and the Atomic Energy Act. 257 U.S. copyright law has a compulsory license provision for the [*311] copying and distribution of "nondramatic musical works" in phonorecords or digital transmission. 258 International treaty law contains provisions which allow for the creation of compulsory licenses to facilitate access to technology for situations such as food security emergencies. 259 However, there are no compulsory license provisions in U.S. patent law. 260 Therefore, agricultural biotechnology firms cannot be obliged to license their technology to help stave the food security problem in sub-Saharan Africa. A global security emergency with food insecurity as one of its root causes may require the use of another source of compulsion to motivate agricultural biotechnological firms to license their patented research tool technologies.

----Patents chill agricultural biotech research on African staple crops

Trudell 05
(06 JD Candidate @ Syracuse University College of Law [Robert H. Trudell, "FOOD SECURITY EMERGENCIES AND THE POWER OF EMINENT DOMAIN: A DOMESTIC LEGAL TOOL TO TREAT A GLOBAL PROBLEM," Syracuse Journal of International Law and Commerce, Fall 2005, 33 Syracuse J. Int'l L. & Com. 277]edlee

When a patent covers an agricultural biotechnological research tool with wide application in agricultural research to address food insecurity in developing countries, then that patent may block important food security research and innovation. 222 A "blocking patents" strategy is one in which a firm in a complex industry, such as agricultural biotechnology, will build up its portfolio of patents to create "bargaining chips" for cross-licensing negotiations with rival firms and to also secure the freedom-to-operate to develop new inventions using the needed technology protected by their rivals' patents. 223 According to one survey of complex industries, this "blocking" capability served as motivation for patenting technology second only to the motivation in securing protection from copying. 224 It has been noted that when firms patent to block their rivals, they do so "to hold their rivals hostage by controlling technology that [their rivals] need." 225

It is the threat of legal action, which blocks the use of patented technology. 226 Firms can counter such threats by holding patents of their own: patents that their rivals may wish to utilize in their own product development. 227 Therefore, in complex industries, blocking patents can be used offensively or defensively as a counter-measure to a threatened infringement suit. 228

This blocking phenomenon chills agricultural research. For example, one public research organization in Africa, the International Institute for Tropical Agriculture (IITA), headquartered in Nigeria, has been calling for assistance in increasing its capacity to conduct biotechnological research. 229 The main thrust of the call was for [*307] increased research capacity (researchers, equipment, etc.), but IITA also stated the need for legislation on intellectual property rights, "for countries to take full advantage of biotechnological tools." 230 Unlike private agricultural biotechnological firms, researchers at IITA do not hold portfolios of patents on their technology. 231 As has been stated, there has been little agricultural biotechnological research on the staple crops which thrive in sub-Saharan Africa's soil with its low fertility, for example on cassava. 232 Patents which block such research from going forward blocks the research needed to treat food insecurity.

IITA is one of fifteen public research centers worldwide that together comprise the Consultative Group on International Agricultural Research (CGIAR), a result of the Green Revolution, founded in 1971. 233 When the research centers of CGIAR seek to derive new agricultural crops through biotechnology, say by using upstream research tools, the number and breadth of the patents covering today's technology make establishing clarity in "freedom to operate ... an onerous task." 234

----Restrictive patents undermines public sector development of biotech for humanitarian purposes

Nwabueze 05
(Professor of Law @ University of Ottawa [Remigius N. Nwabueze, "WHAT CAN GENOMICS AND HEALTH BIOTECHNOLOGY DO FOR DEVELOPING COUNTRIES?," Albany Law Journal of Science & Technology, 2005, 15 Alb. L.J. Sci. & Tech. 369]edlee

Traditionally, the public sector has done research on many public-interest projects that may not be of any commercial interest to the private sector. Results of such research were systematically channeled to the public. 120 For instance, universities and public [*393] sector institutions in the U.S.A and other countries have, in the past, developed new and improved varieties of crops that were transferred to the public through agricultural extension services. 121 However, the increase in patenting and licensing of many biotechnology products that originated from the universities is threatening this significant role of the public sector. 122 Some public sector institutions have recently realized that the restrictive terms of technology transfer licenses undermine the institutions' ability to utilize their inventions for humanitarian purposes or to address the needs of specialty farmers in the developed world. 123 Furthermore, a public sector wishing to develop a biotech product that could address the health needs of a developing country might discover that it has to navigate through a maze of patents with fragmented ownership. 124 Bundling such disparate patents may be cost prohibitive or discourage the desired innovation. 125 An example is the production of vitamin A [*394] enhanced rice known as "golden rice." 126 Rice is a staple food in many developing countries where vitamin A deficiency is a serious health problem and contributes to infant mortality. 127 The Swiss Federal Institute of Technology, a public sector institution, sought to confront this health problem by conducting the needed biotechnology research that led to the development of golden rice. 128 This significant innovation with potentials for addressing vitamin A deficiency in many developing countries was nearly stillborn because the Swiss Federal Institute of Technology needed to bundle 70 different "proprietary research tools belonging to 32 companies and universities." 129

----Corporate control of agricultural biotech prevents it use by small-scale African farmers

Taylor & Cayford 03
(Sr. Fellow & Researcher @ Resources for the Future [Michael R. Taylor and Jerry Cayford, American Patent Policy, Biotechnology, and African Agriculture: The Case for Policy Change, RFF Report, NOVEMBER 2003 pg. RFF-RPT-Patent.pdf]edlee

There are many constraints, besides U.S. patents and patent policy, on the ability of developing countries to access and effectively use biotechnology for food security purposes. These have been studied and documented extensively by others157 and well summarized recently by Walter Falcon.158 One of the most fundamental is the shift of agricultural research resources from the public to the private sector. This has not only placed many of the tools of biotechnology in the hands of private companies that lack an economic incentive to apply them to the problems of subsistence and small-scale African farmers, it has also diminished the capacity of public-sector researchers to take full advantage of the latest technology. As discussed in Chapter 2, if the potential of biotechnology to address developing country agronomic and food security problems is to be realized in the near term, the technology needs to be in the hands of public-sector researchers in the very institutions—national agricultural research organizations and the international research system159—that have experienced funding declines in recent years. Their ability to take advantage of biotechnology is thus constrained by a scarcity of research infrastructure, financial resources, and scientists trained to conduct biotechnology research.160 pg. 47-48

----Public research organizations are forced to work in isolation. The lack of data from private firms impairs their ability to navigate the regulatory and commercialization processes

Spielman, Cohen, & Zambrano 06
(Research Fellow @ International Food Policy Research Institute, Senior Research Fellow in the Environment and Production Technology Division @ International Food Policy Research Institute, & Research Analyst @ International Food Policy Research Institute [David J. Spielman, Joel I. Cohen, & Patricia Zambrano, "Will Agbiotech Applications Reach Marginalized Farmers? Evidence from Developing Countries," AgBioForum: The Journal of Agrobiotechnology Management & Economics Volume 9 // Number 1 // Article 3 (2006) pg. http://www.agbioforum.org/v9n1/v9n1a03-spielman.htm]edlee

The IFPRI-ISNAR study also suggests that progress has been hampered by the fact that most public research organizations surveyed are working in isolation from other research actors, both public and private. Only 7% of transformation events generated by these organizations were conducted in collaboration with the private sector, while only 22% were generated in collaborations between or among public institutions (Table 3).3 Relatedly, only 5% of all genetic resources used in transformation events were obtained from either local or foreign private sector sources. Instead, most genetic materials were derived from public sources (Atanassov et al., 2004). Furthermore, there was no evidence found of any collaborative research links between or among developing countries (i.e., south-south collaboration), whether in the public or private sectors.

In the absence of efficacy or safety data from private firms and other research institutions that have conducted transformations of similar crops and/or traits in other countries, public research organizations often have less information with which to navigate regulatory and commercialization processes. Moreover, in the absence of scientific interaction and information exchanges between sectors and organizations, many of the public researchers who are tapped to serve on biosafety committees, regulatory agencies, or advisory bodies might be less equipped to provide real expertise in such positions.

The relatively small role attributable to the private sector in agbiotech and GM research in developing countries suggests that public-private research collaborations face significant barriers to implementation. Respondents to the IFPRI study indicate that public-private partnerships are constrained by conflicting incentive structures, high transaction and opportunity costs, risks associated with proprietary assets, and mutually negative misperceptions. Their responses indicate that risk, along with negative misperceptions, are the most significant constraints, followed by conflicting incentives and high costs.

*** Harms

----Food Aid will not solve African food insecurity

Trudell 05
(06 JD Candidate @ Syracuse University College of Law [Robert H. Trudell, "FOOD SECURITY EMERGENCIES AND THE POWER OF EMINENT DOMAIN: A DOMESTIC LEGAL TOOL TO TREAT A GLOBAL PROBLEM," Syracuse Journal of International Law and Commerce, Fall 2005, 33 Syracuse J. Int'l L. & Com. 277]edlee

To address food security emergencies, one solution has been the provision of food aid to the developing world. This treatment is practiced by the governments of the developed world, 110 international organizations, 111 nongovernmental organizations, 112 and individuals worldwide. 113 These efforts helped stave off numerous catastrophes. 114 Yet, food aid alone is not enough to help many of the emergencies in sub-Saharan Africa, which increase the food insecurity of the region. 115 While there have been charitable organizations for centuries, such "business as usual" is not a solution to treat the severe food security problem, which may lie ahead. Indeed, food aid may be little more than a "band-aid" treatment for a growing international problem. 116

----30% can not afford a diet with a minimum caloric intake

Kowalski 02
(JD @ University of California at Davis [Tara Kowalski, "International Patent Rights and Biotechnology: Should the United States Promote Technology Transfer to Developing Countries?," Loyola of Los Angeles International & Comparative Law Review, Winter 2002, 25 Loy. L.A. Int'l & Comp. L. Rev. 41]edlee

In developing countries, 840 million people currently suffer from malnutrition and 1.3 billion are afflicted with poverty. 4 Approximately 30 to 40% of the people in these countries cannot afford a diet consisting of the minimum amount of calories necessary to ensure a healthy and active life. 5 In addition, 250 million children are at risk of vitamin A deficiency, which can result in learning disabilities and irreversible blindness. 6 Population growth threatens to intensify hunger and poverty in developing countries. Global population is expected to double by [*43] 2050, with 90% of the growth occurring in developing counties. 7 Life-threatening diseases, such as malaria, hookworm, sleeping sickness, and schistosomiasis, also burden populations in developing countries. 8 Biotechnology offers hopes of solving these problems, primarily through GM crops and life-saving drugs.

----Hunger is increasing in Africa

AfricaBio 2007
(Mar 13, 07 [AfricaBio is a non-political, non-profit biotechnology association for the safe, ethical and responsible research, development and application of biotechnology and its products. The Association also serves as a forum for informed dialogue on biotechnological issues in Africa. "The role of agricultural biotechnology in hunger and poverty alleviation for developing countries," pg. http://www.seedquest.com/News/releases/2007/march/18674.htm]edlee

Top of the agenda for world leaders today is the alleviation of poverty and hunger, with the goal to cut poverty 50% by 2015. However, as Prof. Diran Makinde, from the School of Agriculture, Rural Development and Forestry of the University of Venda in South Africa, pointed out in his presentation to Biovision, ten years after the 1996 World Food Summit, which promised to reduce the number of undernourished people by half by 2015, there are more hungry people in 2006 than there were in 1996. Prof. Makinde called for new approaches to ensure sustainable food production in developing countries; especially in Africa because the majority of least developed countries are in Africa.

----A quarter of a billion people are at risk. Increasing the yield of Maize solves

SeedQuest 2007
[Jan. 29, 07 "Enhanced, drought-tolerant maize will give African farmers options, even with global warming," January 29, 2007, pg. http://www.seedquest.com/News/releases/2007/january/18232.htm]edlee

More than a quarter of a billion Africans depend on maize as their staple food, often eating a quarter kilo or more of maize and maize products every day. Any disruption in the supply of maize, either at the farm level or to the markets, has destructive consequences for the most vulnerable. Unpredictable rainfall, recurring drought, and loss of soil fertility have all made the maize harvests in Africa uncertain. Today, many farm families cannot grow enough food to last the year and do not have income to buy food. Accepting donated food aid is often the only way to survive. This robs families of their dignity and shackles development.
For more than a decade, CIMMYT and IITA, working in cooperation with a wide range of partners in countries throughout sub-Saharan Africa, have been developing solutions, in particular maize that can produce even during drought, for farm families who depend on maize for their food security and livelihoods. Farmers themselves participate in the breeding process, providing land for test plots and screening, and scoring potential new varieties. Thanks to the combined efforts of national agricultural research systems, non-government organizations, and seed companies in several African nations, up to a million hectares are now sown to new, drought-tolerant varieties, giving farmers a 25-30% boost in yield.
But there is much more potential to be realized for farmers in the region, potential that can raise farm families from below subsistence to annual surplus. That will give them the option to sell surpluses to the rapidly growing urban markets or to devote some of their land to other crops, in particular crops which contribute to restoring soil fertility and enhancing incomes. In either case the farmer's overall risk is lessened and life and livelihoods improved.

----Food insecurity threatens to collapse African states and spread war, economic destitution, and disease outbreaks across the continent

Jooma 06
(Researcher with the African Security Analysis Program @ Institute for Security Studies. [Mariam Bibi Jooma, "Africa in 2006: The humanitarian hangover?," African Security Review 15 NO 1 2006, pg. http://www.iss.co.za/index.php?link_id=3&slink_id=3464&link_type=12&slink_type=12&tmpl_id=3]edlee

The question of food security nevertheless goes to the heart of issues surrounding chronic poverty and underdevelopment. At the time of writing an estimated 11 million people in East Africa and the Horn of Africa are facing critical food shortages owing to a prolonged drought – some 1.75 million people in southern Ethiopia's Somali and Oromiya regions alone. Experts predict that the coming rains will be insufficient.

The food debate is not a new one. From the 1970s development theory of agricultural underproduction to Amartya Sen's more nuanced appreciation of the gaps between production and access to food, the new millennium feels all too familiar for large parts of the continent. Seen in the larger context, food security in the Horn resonates not only with the compromise of human dignity of individuals, but also with a severe collapse of social capacity that is likely to destabilise political institutions.

So, while the current flash appeals for aid will make the headlines, it is the longer-term structural violence of poverty that undermines the 'democratisation' project. Out of more than 850 million chronically hungry people globally, an estimated 10 million will die every year of hunger – this accounts for more than tuberculosis, malaria, and HIV/AIDS combined.

According to Stephen Devereux of the University of Sussex, mass starvation is only one result of famine. Others include a drop in fertility, economic destitution, community breakdown, distress migration, and outbreaks of disease.1

*** Solvency

----US is the world leader in biotech

Kowalski 2002
(JD at University of California at Davis **02** (Tara Kowalski, "International Patent Rights and Biotechnology: Should the United States Promote Technology Transfer to Developing Countries?," Loyola of Los Angeles International & Comparative Law Review, Winter 2002, 25 Loy. L.A. Int'l & Comp. L. Rev. 41)

Developing countries currently lack sufficient access to biotechnology in two respects. First, they do not have an adequate quantity of biotechnology to address their needs. Second, developed countries, which conduct most biotechnology research and development (R&D), create products for developed markets. Therefore, most current biotechnology does not address problems that are unique to developing countries. The United States is currently **the world leader** in both the production and consumption of biotechnology. 24 U.S. international patent filings demonstrate its dominance in the area of biotechnology R&D. 25 In the first half of the 1990s, the United States held priority of 63% of international biotechnology patents and 59% of the most highly cited biotechnology inventions. 26 Federal grants and private industry are the two primary sources of funding for biotechnology R&D in the United States. The United States provides more funding for biotechnology R&D than any other government in the world.

----There are many scientist standing ready to research biotech targeted at Africa however, fear of patent litigation chills their innovation- plan solves this

Kowalski 2002
(JD at University of California at Davis (Tara Kowalski, "International Patent Rights and Biotechnology: Should the United States Promote Technology Transfer to Developing Countries?," Loyola of Los Angeles International & Comparative Law Review, Winter 2002, 25 Loy. L.A. Int'l & Comp. L. Rev. 41)

GM crops can alleviate hunger and malnutrition in developing countries by increasing developing countries' crop yields. GM crops can increase crop yields because they can be genetically engineered to resist the destructive conditions prevalent in developing countries, such as insects, herbicides, viruses, drought, and soil acidity. 9 To date, scientists have created more than twenty plant species that are resistant to over thirty different viral diseases. 10 In addition, they have engineered herbicide-resistant canola, corn, cotton, maize, and soybean, 11 as well as insect-resistant cotton, maize, potatoes, rice, sugarcane, tobacco, tomatoes, and walnuts. 12 Although most of these crops are not staples for developing countries, the same technology can be applied to developing countries' crops. 13

----African scientific advancements will snowball. They will quickly build on small steps of innovation

Pardey 2004

(et al Professor of Science and Technology Policy at the University of Minnesota (Philip G. Pardey, Bonwoo Koo, Research Fellow at the International Food Policy Research Institute, & Carol Nottenburg, Principal of Cougar Patent Law, "Creating, Protecting, and Using Crop Biotechnologies Worldwide in an Era of Intellectual Property," Minnesota Journal of Law, Science & Technology, December, 2004, 6 Minn. J.L. Sci. & Tech. 213)

These trends may actually understate the scientific knowledge gap. Science is a cumulative endeavor, with a snowball effect. Innovations beget new ideas and further rounds of innovation or additions to the cumulative stock of knowledge. The sequential and cumulative nature of scientific progress and knowledge is starkly illustrated by crop-improvement. It generally takes seven to ten years of breeding [*219] to develop a uniform, stable, and superior variety. 32 But breeders of today build on a base of knowledge built up by breeders of yesteryear. 33 The cumulative nature of this process means that past discoveries and related research are an integral part of contemporary agricultural innovations. Conversely, the loss of a variety, or the details of the breeding histories that brought it about, means the loss of accumulated past research to the present stock of knowledge. "Providing adequate funding for research is thus only part of the science story. Putting in place the policies and practices to accumulate innovations and increase and preserve the stock of knowledge is an equally important and almost universally unappreciated foundation." 34 Estimates of the stocks of scientific knowledge arising from public and private research conducted in the United States and Sub-Saharan Africa have been developed by Philip G. Pardey and Nienke Beintema. 35 In their report, Slow Magic, Pardey and Beintema compared historical research spending with the agricultural GDP for 1995. 36 They examined historical research spending starting from 1850 for the United States and 1900 for Africa and allowed for a gradual diminution of the effect of distant past research and development spending on money measures of the current stock of knowledge. 37 They found that the accumulated stock of knowledge in the United States was about eleven times more than the amount of [*220] agricultural output produced in that year. 38 In other words, for every $ 100 of agricultural output there existed a $ 1,100 stock of knowledge to draw upon. 39 In Africa, the stock of knowledge in 1995 was actually less than the value of African agricultural output. 40 The ratio of the U.S. knowledge stock relative to U.S. agricultural output in 1995 was nearly twelve times higher than the corresponding amount for Africa. 41 Stocks of knowledge measures provide a better basis for evaluating the developed versus developing country's capacity for actually carrying out crop biotechnologies. In fact, the overall differences may understate the effective gaps for this advanced area of agricultural research and development. These gaps also underscore the immensity, if not the outright impossibility, of playing "catch-up," in addition to the need to transfer knowledge across borders and continents.

*** GM Crops Safe

----Transgenics increase food safety

Kelemu et al 03 –
(Centro Internacional de Agricultura Tropical (CIAT) [Segenet Kelemu, George Mahuku (Centro Internacional de Agricultura Tropical), Martin Fregene (Centro Internacional de Agricultura Tropical), Douglas Pachico (Centro Internacional de Agricultura Tropical), Nancy Johnson (Centro Internacional de Agricultura Tropical), Lee Calvert (Centro Internacional de Agricultura Tropical), Idupulapati Rao (Centro Internacional de Agricultura Tropical) , Robin Buruchara (Kawanda Agricultural Research Institute), Tilahun Amede (African Highland Initiative), Paul Kimani (Professor of Agriculture and Veterinary Sciences @ University of Nairobi), Roger Kirkby (Kawanda Agricultural Research Institute), Susan Kaaria (Kawanda Agricultural Research Institute), Kwasi Ampofo (Agricultural Technology Development and Transfer Project) "Harmonizing the agricultural biotechnology debate for the benefit of African farmers," African Journal of Biotechnology Vol. 2 (11), pp. 394-416, November 2003]edlee

Current data show that transgenic crops can enhance food safety. For example, GM maize containing Bt has reduced predisposition to infections by mycotoxinproducing fungi such as Aspergillus and Fusarium spp. Mycotoxin levels in maize food products are therefore reduced (Munkvold et al., 1999; Windham et al., 1999). Likewise, transgene-induced gene silencing has been used to prevent allergens accumulating in crops (Herman et al., 2003). These positive findings imply that the potential benefits of transgenic crops in enhancing food safety should also be taken into account when considering potential risks. Pg. 400

----History is on our side on this question. US consumption proves that there are few food safety concerns

Kelemu et al 03 –
(Centro Internacional de Agricultura Tropical (CIAT) [Segenet Kelemu, George Mahuku (Centro Internacional de Agricultura Tropical), Martin Fregene (Centro Internacional de Agricultura Tropical), Douglas Pachico (Centro Internacional de Agricultura Tropical), Nancy Johnson (Centro Internacional de Agricultura Tropical), Lee Calvert (Centro Internacional de Agricultura Tropical), Idupulapati Rao (Centro Internacional de Agricultura Tropical) , Robin Buruchara (Kawanda Agricultural Research Institute), Tilahun Amede (African Highland Initiative), Paul Kimani (Professor of Agriculture and Veterinary Sciences @ University of Nairobi), Roger Kirkby (Kawanda Agricultural Research Institute), Susan Kaaria (Kawanda Agricultural Research Institute), Kwasi Ampofo (Agricultural Technology Development and Transfer Project) "Harmonizing the agricultural biotechnology debate for the benefit of African farmers," African Journal of Biotechnology Vol. 2 (11), pp. 394-416, November 2003]edlee)

Finally, much of the soybean and maize produced in USA consists of transgenic varieties, and people have been consuming GM food products for some time now. So far, no cases of ill health from such consumption are known, bringing us to the question of why Africans cannot safely grow and consume crops genetically modified with enhanced agronomic traits of importance. Pg. 400

----No substantiated evidence for their claim that biotech has harmful health consequences

Nicholson 03

(Registered patent attorney working for the USDA Agricultural Research Service [David R. Nicholson, Former Associate Solicitor at the United States Patent and Trademark Office, "Agricultural Biotechnology and Genetically-Modified Foods: Will the Developing World Bite?," Virginia Journal of Law and Technology, Summer, 2003, 8 Va. J.L. & Tech. 7]edlee

Not everyone is convinced of the merits of biotechnology and the benefits of genetically-modified crops. Some of the opposition regarding agricultural biotechnology relates simply to the notion that the technology may not deliver on its promises, and that it might even lead to lower overall yields and increased pesticide use. 127 An additional factor is the perceived uncertainty that may arise when there is a gene transfer between unrelated species, and some have accused the biotechnology industry of "flying blind" because of the inability to predict all the effects of this type of technical research. 128 This criticism would seem a little misplaced, perhaps, if for no other reason than the fact that research activity is itself intended to increase knowledge and understanding in the first place -- it is meant to reduce uncertainty. Criticizing scientists because they want to better understand the world around them and bring improvements to all of mankind does not seem particularly productive. Moreover, it is important to note that many of the fears expressed by the opponents of biotechnology, so far at least, are not supported by much, if any, evidence or substantiation. 129 In particular, no one has yet detected a health problem caused by a genetically-engineered food. 130

---- All the world's leading academies argue that GM is safe

Motsoeneng 2007

(Jan 23, 07 [Tiisetso Motsoeneng, 'GM foods not a threat', Tue, 23 Jan 2007, pg. http://iafrica.com/news/sa/596433.htm]edlee)

"**Not a shred of medical or scientific evidence** has been produced anywhere in the world to support these claims. To the contrary, **all the world's leading academies** of science and medicine and agricultural research institutions have given GM food a clean bill of health," the International Service for the Acquisition of Agri-Biotech Applications (ISAAA) said on Tuesday.

----30 years and millions of experiments disprove your impact

Judson 2007

(Mar. 17, 07 - Evolutionary biologist at Imperial College [Olivia Judson, "Time to try the forbidden fruit GM food has had a terrible press, but without it we would all starve, argues biologist Olivia Judson," The Daily Telegraph, Mar 17 2007 10:15AM, pg. http://www.bioportfolio.co.uk/cgi-bin/dialogserver.exe?CMD=hit.displayMdoc&ID=141693&HITNO=3&MSIZE=1000&LANGUAGE=en&FILE=doc.NEWSFEED&SAVEQUERY00=GM%20crop&SAVEPROP00=L%3den&SAVEDB=news&SAVEORGANISE_CODED=R:date&R=141693&THISHREF=file:/D:/newsedge/newsedge_19_03_2007/nitf/St_Nitf_Time_to_try_the_forbidden_frui_e0319843.7ie.xml&THEHOST=]edlee

Today, genetic modification is a routine technique in laboratories around the world. Since the potential for it was discovered, 30 years ago, millions of experiments with it have been done. One of the most common modifications is to insert a jellyfish gene into something else. The jellyfish Aequorea victoria has a gene for a protein called green fluorescent protein? The protein glows green when you shine blue light at it. If you add the gene for green fluorescent protein to the end of some other gene, you can see when that other gene is being used: a little green light goes on. This doesn't harm the organism - and gives us a way to watch what's happening in the cell.

----The best science is on our side

Prakash and Conko 04 – Professor of plant biotechnology at Tuskegee University and Director of Food Safety Policy at the Competitive Enterprise Institute [C. S. Prakash (President of the AgBioWorld Foundation) and Gregory (Vice president of the AgBioWorld Foundation) "Technology That Will Save Billions From Starvation," The American Enterprise, March 01, 2004, pg. http://www.agbioworld.org/biotech-info/articles/agbio-articles/save-billions.html]edlee

Leading scientists around the world have attested to the health and environmental safety of agricultural biotechnology, and they have called for bioengineered crops to be extended to those who need them most--hungry people in the developing world. Dozens of scientific and health associations, including the U.S. National Academy of Sciences, the American Medical Association, the U.K.'s Royal Society, and the United Nations Development Programme, have endorsed the technology. Nearly 3,500 eminent scientists from all around the world, including 24 Nobel laureates, have signed a declaration supporting the use of agricultural biotechnology. And a review of 81 separate research projects conducted over 15 years--all funded by the European Union--found that bioengineered crops and foods are at least as safe for the environment and for human consumption as conventional crops, and in some cases even safer.

----The UN's Food and Agriculture Organization sides with us

Prakash and Conko 04
(Professor of plant biotechnology at Tuskegee University and Director of Food Safety Policy at the Competitive Enterprise Institute [C. S. Prakash (President of the AgBioWorld Foundation) and Gregory (Vice president of the AgBioWorld Foundation, "Can GMOs Play a Role in Developing Countries?," National Research Council of Canada's Plant Biotechnology Institute, December 06, 2004, pg. http://www.africabiotech.com/news2/article.php?uid=120]edlee

That is why the use of bioengineering technology for the development of improved plant varieties has been endorsed by dozens of scientific bodies. The UN's Food and Agriculture Organization and World Health Organization, the UK's Royal Society, the American Medical Association, and the French Academies of Medicine and Science, among others, have studied bioengineering techniques and given them a clean bill of health. Moreover, bioengineered crop plants may be of even greater value in less developed countries than in industrialized ones.

In a report published in July 2000, the UK's Royal Society, the National Academies of Science from Brazil, China, India, Mexico, and the U.S., and the Third World Academy of Science, embraced bioengineering, arguing that it can be used to advance food security while promoting sustainable agriculture. "It is critical," declared the scientists, "that the potential benefits of GM technology become available to developing countries." And an FAO report issued in May 2004 argued that "effective transfer of existing technologies to poor rural communities and the development of new and safe biotechnologies can greatly enhance the prospects for sustainably improving agricultural productivity today and in the future," as well as "help reduce environmental damage caused by toxic agricultural chemicals."

----Non-unique: Asia will drive the growth of GM Foods

Shuping 2007
(Jan 30, 07 [Niu Shuping, "Asia to drive growth of GMO crops in next decade," 1/30/2007, pg. http://www.truthabouttrade.org/article.asp?id=6959]edlee

BEIJING (Reuters) - Asia is set to become the driving force behind biotech crops in the next decade, despite hesitance by China to commercialize GMO rice, a Chinese scientist and an international body said on Monday.

In 2006, the first year of the second decade of biotech crops, India took over China as the world's top grower of genetically modified (GMO) cotton, the pro-biotech International Service for the Acquisition of Agri-biotech Applications (ISAAA).

"The second decade will likely feature strong growth in Asia led by China, India and new countries like Pakistan and Vietnam," it said in a report. "The first decade (1996-2005) was the decade of the Americans."

----Non-Unique – China is increasing biotech production

Bowden 2007
(Mar 15, 07 [Richard Bowden, "China To Increase Spending On Agricultural Biotechnology," All Headline News, March 15, 2007 7:18 p.m. EST, pg. http://www.allheadlinenews.com/articles/7006757771]edlee

China is expected to increase its spending on agricultural biotechnology almost five fold by 2010 in an attempt to improve food security for its rapidly increasing population the Financial Times reported on Thursday.
China's population, currently 1.3 billion or twenty percent of the world's total, is expected to rise to 1.5 billion by 2020. Yet with only seven percent of the world's arable land, China needs to address the problem of feeding its people.
By increasing its research in genetically modified food products, China hopes to lessen its dependency on other countries for food products such as soy beans.
"The government takes the issue of food security seriously," said Zhang Liang Chen, president of the Agricultural University of China. "Last year we imported 17m tonnes of soybean from the US, Brazil and Argentina. This dependency could lead to trouble in the future."
Already accounting for twenty percent of the world's investment into global research into agricultural biotechnology, the spending is expected to more than quadruple as China attempts to meet soaring food demand.

----China's adoption will be modeled

CHOWDHARY 2007
(Mar. 12, 07 [SUDHIR CHOWDHARY, "Seeking better biotech 'yields'," Posted online: Monday, March 12, 2007 at 0152 hours IST, pg. http://www.financialexpress.com/fe_full_story.php?content_id=157490]edlee

The adoption of Bt cotton by India and China can greatly influence the adoption and acceptance of biotech crops in countries throughout the world, particularly in developing countries. It is noteworthy that both countries elected to pursue a similar strategy by first exploring the potential benefits of crop technology with a fibre crop, Bt cotton, which has already generated significant and consistent benefits in China, with the same pattern emerging in India, the largest grower of cotton in the world.

----53% of the world's population lives in countries that approves biotech crops

Chowdhary 2007
(Feb 8, 07 [Sudhir Chowdhary, "'Critics of GM crops are selfish people'" The Financial Express, February 8, 2007, pg. http://www.gmoafrica.org/2007_02_01_archive.html]edlee

Why is a significant portion of the farming community paranoid about the adoption of GM crops?
Almost 53% of the world's population now lives in countries where biotech crops are being approved, used, and are generating profits. In fact, majority of the global population is enjoying the benefits of biotech crops. This is a very conservative estimate because it is based on the 22 countries that actually plant biotech crops today. If we take into account the number of countries that have approved import of biotech crops for food and feed, the number of countries increases from 22 to 51.

----Global adoption now… US, Brazil, EU

CHOWDHARY 2007
(Mar. 12, 07 [SUDHIR CHOWDHARY, "Seeking better biotech 'yields'," Posted online: Monday, March 12, 2007 at 0152 hours IST, pg. http://www.financialexpress.com/fe_full_story.php?content_id=157490]edlee

The United States continues to drive growth in North America and globally, accounting for the greatest absolute acreage increase in 2006 with the addition of 4.8 million hectares. Brazil leads growth in South America with an increase of 22% to total 11.5 million hectares of soybeans and biotech cotton. Growth also continues in the countries of the European Union (EU) where Slovakia became the sixth EU country out of 25 to plant biotech crops.

----Adoption of the technology is booming in other parts of the world

The International Service for the Acquisition of Agri-biotech Applications 06 [
"Global Biotech Crop Area Continues to Soar in 2005: After Decade of Commercialization" ISAAA Briefs No. 34-2005: Press Release, Jan. 11, 2006, pg. http://www.isaaa.org/kc/bin/briefs34/pr/index.htm]edlee

SAO PAULO, Brazil (Jan. 11, 2006) — Farmer demand has driven annual double-digit increases in biotech crop adoption since the crops were commercialized a decade ago. In 2005, four new countries and a quarter million more farmers planted biotech crops as part of an 11 percent increase in global biotech crop area, according to a report released today, authored by Dr. Clive James, chairman and founder of ISAAA, the International Service for the Acquisition of Agri-biotech Applications.
Since initial commercialization in 1996, global planted area of biotech crops has soared by more than fifty-fold from 1.7 million hectares in six countries to 90 million hectares in 21 countries in 2005. The 8.5 million farmers planting biotech crops in 2005 also marked a significant milestone as the 1 billionth cumulative acre, or 400 millionth hectare, was planted.
Herbicide-tolerant soybeans continue to be the most widely adopted trait, accounting for 60 percent of the total global area. Varieties with stacked traits are growing in popularity, accounting for 10 percent of the global area. In 2005, 100 million "trait hectares" were planted, which better quantifies those hectares planted to varieties with multiple biotech enhancements.
"Farmers from the United States to Iran, and five EU countries demonstrate a trust and confidence in biotech crops, as indicated by the unprecedented high adoption rate of these crops," said Dr. James, chairman and founder of ISAAA. "The continued expansion of countries growing biotech crops also bears witness to the substantial economical, environmental and social benefits associated with these crops."

----Expansive use of GMOs in the US and all six continents empirically denies your claim

Lombard 06
(Public relations consultant to the agricultural biotechnology industry in South Africa. [Hans Lombard, 'GMO is safe', iafrica.com, Tue, 05 Dec 2006, pg. http://lifestyle.iafrica.com/dining_in/local_cuisine/506367.htm]edlee

Two highly reputable United Nations Agencies — the World Health Organisation (WHO) and the Food and Agricultural Organisation (FAO) have fully endorsed GMOs in a joint statement: "Biotechnology (GMOs) provides new and powerful tools for research and for accelerating the development of new and better foods."

As the old saying goes: The proof of the pudding is in the eating. In 2005 some 8.5 million farmers in 21 countries on all six continents planted 90-million hectares of GM crops, up 11 percent over the previous year.

In the USA, for the past 11 years, 280-million people (40-million in South Africa for the past seven years) have each year been eating GM food without developing as much as a headache.

----Ewen and Pusztai research is methodologically bankrupt

Kelemu et al 03
(Centro Internacional de Agricultura Tropical (CIAT) [Segenet Kelemu, George Mahuku (Centro Internacional de Agricultura Tropical), Martin Fregene (Centro Internacional de Agricultura Tropical), Douglas Pachico (Centro Internacional de Agricultura Tropical), Nancy Johnson (Centro Internacional de Agricultura Tropical), Lee Calvert (Centro Internacional de Agricultura Tropical), Idupulapati Rao (Centro Internacional de Agricultura Tropical) , Robin Buruchara (Kawanda Agricultural Research Institute), Tilahun Amede (African Highland Initiative), Paul Kimani (Professor of Agriculture and Veterinary Sciences @ University of Nairobi), Roger Kirkby (Kawanda Agricultural Research Institute), Susan Kaaria (Kawanda Agricultural Research Institute), Kwasi Ampofo (Agricultural Technology Development and Transfer Project) "Harmonizing the agricultural biotechnology debate for the benefit of African farmers," African Journal of Biotechnology Vol. 2 (11), pp. 394-416, November 2003]edlee

Another poker inflaming the fiery GM food safety debate was a paper published by Ewen and Pusztai (1999) in The Lancet, which examined the effects of GM potatoes on the digestive tracts of rats. The potatoes expressed a snowdrop (Galanthus nivalis L.) lectin (agglutinin), which is known to be toxic to mammals. The study claimed to have found appreciable differences between the intestines of rats fed with GM potatoes and those fed with unmodified potatoes. Not only was the goal of the experiment inappropriate (introducing a gene coding for a known poison) but the methodology employed and data interpretation were also doubtful (Mowat, 1999). Unfortunately, this work continues to be cited to support health hazard claims by opponents of the GM crop technology. Pg. 400

*** Help African Economy

----GM Foods will jumpstart Africa's economy and prevent future food crises

Ogodo 2006

[Ochieng' Ogodo, "US Biotech Companies Urge Africa to Catch Up," Islam Online, June 13, 2006, pg. http://www.africabiotech.com/news2/article.php?uid=149]edlee

A Solution to Africa's Food Insecurity?

It is argued that African food insecurity and trade imbalance in the global arena could worsen due to the reluctance of African countries to take up modern agricultural sciences.

The international trade in agricultural products and processed foods continues to increase and African nations must strive to be effective partners in this global network.

African nations considering biotechnology as an integral part of their agricultural economy and food supply, it is argued, will contribute significantly to the development of agricultural biotechnology and thus food security. Africa could become a **key player in the global food economy**.

Plant biotechnology is still in its infancy. The development of commercial biotechnology products has been achieved without particularly addressing farming problems in developing countries.

However, research is ongoing in the US and elsewhere, particularly in universities, public institutions and international plant breeding centers, that is focusing on staple crops that are typical in many developing countries. These include rice, cassava, sweet potatoes, cowpea banana and maize among many others.

Researches are focusing on traits that would solve key farming problems such as disease resistance, drought tolerance, and pest resistance. Their goal is to enable small resource farmers to produce enough food to eat in addition to surplus which is commercially attractive to sell.

But for African farming to truly go commercial, Stautz argued, there are other fundamental factors that must be addressed. These include pricing policies and government controls imposed on agriculture, access to reliable water supplies, taxation, road and rail infrastructure and even direct factors like access to health care. The business of agriculture has become bigger and more specialized since the mid 1950s and is now one of the world's largest industries, employing 1.3 billion people and producing US$ 1.3 trillion worth of goods each year.

Farming is the most important economic activity in Africa, occupying 60 to 80 percent of the population and contributing 30 to 50 percent of the Gross Domestic Product (GDP) in African countries.

Eighty percent of farming is in the hands of small-scale farmers, most of whom farm on small, low-yielding overexploited farmlands. Farming thus remains an unattractive occupation and those involved are members of the lowest rungs in the poverty index.

----GM crops will stabilize economies. Drought will collapse agriculture-based economies

Kowalski 02
(JD @ University of California at Davis [Tara Kowalski, "International Patent Rights and Biotechnology: Should the United States Promote Technology Transfer to Developing Countries?," Loyola of Los Angeles International & Comparative Law Review, Winter 2002, 25 Loy. L.A. Int'l & Comp. L. Rev. 41]edlee

Finally, developing countries can use biotechnology to boost their economic growth and alleviate poverty. GM crops offer an opportunity to improve agricultural programs in developing countries, which can lead to increased employment opportunities, greater self-sufficiency, and heightened economic stability. 20 These possibilities are particularly important, considering that most developing countries have a sizable agriculture sector and some have agriculture-based economies. In Ethiopia, for example, agriculture "accounts for half of the Gross Domestic Product (GDP), 90% of exports, and 80% of total employment." 21 In India, agriculture accounts for 25% of the GDP and 60% of total [*45] employment. 22 Since these countries continue to lose arable land and suffer from periods of drought, 23 GM crops that are immune to these conditions could help stabilize and improve these countries' economies. With poverty being the leading cause of malnutrition, improved economies in developing countries could also help solve their hunger problems.

----The use of GM crops raises the standard of living for subsistence farmers. The 2nd wave of crops will be developed to meet the unique needs of these farmers

Furniss 06
(Sub-editor and writer for GEOGRAPHICAL, the magazine of the Royal Geographical Society
[Charlie Furniss, "The New GM Revolution," Geographical dossier, July 2006]edlee

But how can this be? According to environmental groups such as Friends of the Earth (FOE) and Greenpeace, GMOs and the developing world don't mix. They're simply the means by which large multinationals such as Monsanto plan to take over the world's agriculture and squeeze every last penny out of its poorest farmers. Not only is GM technology dangerous, they say, it doesn't work.

In fact, all of the available evidence suggests that the opposite is true. Ten years after the commercialisation of the first biotech crops, more than six per cent of the world's agricultural land is devoted to GM varieties. Not only have the plants themselves flourished, with none of predicted health and environmental problems, but millions of people are enjoying the benefits, the vast majority of them resource-poor small-holders in developing countries who live on less than US$1 a day. The fact is that, contrary to what we in Europe have been led to believe, GM crops can work. And not only can they work safely and effectively, they can also give poor farmers such as Manukuza an opportunity to raise their standard of living.
Indeed, with experts predicting the arrival of a second wave of GM crops developed specifically to meet the needs of the world's poorest farmers, the next ten years might well prove that it's in the developing world that GMOs will be most appreciated. Pg 36-37

*** Topicality - Public Health

----A paradigm shift has happen. Food insecurity is now considered a public health issue

Mwikisa 05
(Director of the Division of Healthy Environments and Sustainable Development @ WHO Regional Office for Africa [Dr C.N. Mwikisa, "ANNEX 5: OPENING REMARKS," FINAL REPORT: FAO/WHO Regional Conference on Food Safety for Africa, 3–6 October 2005, Harare, Zimbabwe pg. http://www.fao.org/docrep/meeting/010/a0215e/A0215E20.htm#ann5]edlee

Globally, there is a **paradigm shift**, which will no longer only consider food as an agricultural/trade commodity but also as a **public health issue**. At the international level, the 1992 FAO/WHO International Conference on Nutrition recognized that 'access to nutritionally adequate and safe food as a right of each individual'. As a basic human right, food safety was endorsed by the World Health Assembly in May 2000 and accepted by all Ministries of Health as an essential public health function. WHO in consultation with its Member States developed a Global Strategy for Food Safety, which provides guidance to WHO and countries' activity in this area. At the regional level, Resolution AFR/RC53/R5 endorsed by the WHO Regional Committee for Africa in 2003 urged the Regional Director and Member States to strive to improve food safety programs in order to assure the safety of the food of the people in the region.

----Food biotechnology is a public health issue

Ontario Health Promotion E-Bulletin 2002
["Food Biotechnology: Public Health Issues," (Friday, 26 April 2002) - - Last Updated, pg. www.ohpe.ca/index2.php?option=com_content&do_pdf=1&id=166]edlee

The OPHA Workgroup believes food biotechnology is a public health issue because it * affects the food supply of the **entire population**, * has strong impact on agriculture and the environment, and * is a new technology with unpredictable consequences, and therefore requires reliable policies and methods for assessment, monitoring and regulation.

----Food is an essential public health issue (T)

Canadian Nurses Association 2000
[CNA Factsheet: Primary Health Care (2000), pg. www.cna-nurses.ca/CNA/documents/pdf/publications/PS51_Food_safety_security_Nov_2001_e.pdf]edlee

Food is not only an agricultural and trade commodity but also an essential public health issue. There are three food-related health hazards: malnutrition, contamination of food products and food additives. CNA believes that addressing each of these hazards will improve the overall health of the population, reduce the need for health care and increase productivity.

----Food insecurity is a public health issue. It is a determinant of health

McIntyre 06
(Professor of Community Health Sciences @ University of Calgary [Lynn McIntyre MD, MHSc, FRCPC, POVERTY ADMIDST AFFLUENCE: FOOD INSECURITY IN CANADA, October 16, 2006, pg.]edlee

Food is a basic human need along with water, peace, shelter, education and primary health care. It has also been described as a determinant of health. I would suggest that problematizing food insecurity as a public health issue and one that is manifested in poor health outcomes is part of what makes it bad and not wrong. Food security is a determinant of health, yes, but it is also a determinant of life, of human dignity, social progress, civil society, gender equity, justice and sustainable development. In this broader context, food insecurity is wrong.

*** Topicality - Government to Government

----The majority of agriculture research in Africa is done by public institutions. The plan is Government- to-Government

Taylor & Cayford 03
(Sr. Fellow & Researcher @ Resources for the Future [Michael R. Taylor and Jerry Cayford, American Patent Policy, Biotechnology, and African Agriculture: The Case for Policy Change, RFF Report, NOVEMBER 2003 pg. RFF-RPT-Patent.pdf]edlee

We assume that for the foreseeable future—the next two decades at least—the development of biotechnology for the use of small-scale and subsistence farmers in Africa will proceed largely through the public and public-private cooperative channels. This assumption is based on two factors. One is the current reality that most agricultural research for Africa is conducted in public institutions.38 The other is the situation articulated in the previous subsection: that large, private biotechnology companies lack adequate economic incentives to invest their R&D dollars in products to improve the local crops and germplasm that are important to smallscale and subsistence farmers.39 pg. 23-24

*** Topicality - USAID

----Agriculture plays a central role in USAID's development strategy

Taylor & Howard 05
(Sr. Fellow @ Resources for the Future & Professor of Agricultural Economics @ Michigan State University [Michael R. Taylor (Administrator of the USDA's Food Safety and Inspection Service from 1994 to 1996; Deputy Commissioner for Policy at the Food and Drug Administration from 1991 to 1994; and an FDA staff lawyer and Executive Assistant to the FDA Commissioner from 1976 to 1981) and Julie A. Howard , INVESTING IN AFRICA'S FUTURE: U.S. AGRICULTURAL DEVELOPMENT ASSISTANCE FOR SUB-SAHARAN AFRICA, FINAL REPORT—SEPTEMBER 2005, pg. RFF-RPT-AfricaAssistance.pdf]edlee

From the beginning of his tenure in 2001 as administrator of the U.S. Agency for International Development (USAID), Andrew S. Natsios stressed the central role of agriculture in USAID's development strategy and called for increased assistance: Without economic growth and food security, no development effort is sustainable. We will increase support for economic growth and agriculture programs that reduce poverty and hunger, while finding better ways to mobilize and partner with the private sector. (Natsios 2001) pg. v