

# Using government and biotechnology to end world hunger

[Technology](#)



The majority of the population in America would probably use the word "hunger" to describe their mid-afternoon craving for a candy bar or handful of potato chips. Most Americans do not recognize what true hunger is because it is not something that we are faced with every day (Sanchez & Examination, 2005). The United States is fortunate enough to have had fewer than 6% of families with very low food security, according to Nor, Coleman-Jensen, Andrews and Carlson (2010) with the United States Department of Agriculture.

According to their study, food insecurity occurs when access to adequate food is limited by a lack of money or resources (Nor, et al., 2009). These statistics are in stark contrast to the rest of the world, where the total population suffering from hunger is at a staggering 14% (Sanchez & Examination, 2005). At the World Food Summit in 1996 and 2001, the United Nations made a commitment to halve world hunger (Sanchez & Examination, 2005).

This is an admirable goal, and one that is attainable, but what political leaders are lacking is the action behind these words and the implementation of solutions that have the attention to reduce hunger. Perhaps the best way to approach this problem is from an agricultural standpoint. Improving people's ability to contribute to solving the very problem that affects them can have a substantial impact on the base of the problem.

Surprisingly, roughly half of the food insecure households in the world, and 75% in Africa, are those that are located on small scale farms (Sanchez & Swamland's, 2005). Ralston the productivity of these farms, as well as other

local citizen's ability to cultivate fish and livestock would greatly reduce the level of hunger in these areas. Frequently, there are several contributing factors to the limited amount of production these farms are able to produce.

Those factors can include deteriorated soil health, poor water management, and failure to diversify crops to obtain profit and production. The first step to implementing greater agriculture production is to educate government entities and their populations on the steps that should be taken to make these improvements. These changes cannot be successful if political commitment does not move to political action. According to Sanchez and Examination (2005), "Government policies in poor countries can make or break efforts to end hunger" (p. ). The most important step in transitioning into action is for governments to place greater importance on money: the effects of increased budgets being directed towards ending hunger in political leaders respective countries are invaluable. Increasing the budgets in areas such as agriculture, science, education, research, health and energy can do a great deal to help eradicate global hunger. In 2005, more than 5.5 million children were dying each year due to malnutrition related causes (Sanchez & Examination, 2005).

This is clearly a problem that needs more dedication from both local and global efforts, but it is also a problem that is required to be approached from multiple areas of study. In order for a successful According to Bennett and Bennett (2001), cultural diversity is defined as "cultural differences in values, beliefs, and behaviors learned and shared by groups of interacting people defined by nationality, ethnicity, gender, age, physical

characteristics, sexual orientation, economic status, education, profession, religion, organizational affiliation, and any other grouping that generates identifiable tatters. These cultural differences that make each society unique and productive are the same differences that make it difficult to apply universal solutions to problems, create tension in communication and lead to other cultures applying judgment to surrounding societies. Just as there are no universal solutions to problems, it often takes contributions from many different areas to fully solve problems like world hunger. This is even more applicable when the problem is so complex and widespread that one solution cannot be applied to every area that is affected.

While the solution to world hunger can only be reached with teamwork between multiple fields, the two areas that this paper will focus on will be political science and biotechnology. Analyzing and implementing improvements to agriculture production should be the first step to reducing hunger around the globe. In the twentieth century, scientists and agriculturalists have worked together to make significant improvements in the ways crops are produced. These changes to the production of the foods we eat have increased production, reduced the use of pesticides and made them much more tolerant to extreme climate conditions (Burglar, 2000).

Transgenic varieties, or naturally transferred material, and hybrids of cotton, maize, and potatoes are now being successfully introduced commercially in the United States, showing promise that they can be introduced in other areas and cultures as well (Burglar, 2000). These varieties will also allow improved growth in acidic soil areas, thus adding more bearable land to the

global production base. Greater tolerance of extreme climates, such as drought, heat, and cold, will benefit irrigated areas in several ways (Burglar, 2000).

This increased tolerance will allow for reduced water requirements by plants, therefore the locations available for planting will be greatly increased.

Decreased need for pesticides through use of genetically modified crops will help in various ways as well. According to Delver (2005): In China, where yields of conventional cotton and rice are maintained through heavy use of pesticides, the benefits are in savings on the costs of these inputs and on the health of workers from pesticide poisoning and protection of the environment through the use of fewer chemicals.

In South Africa and India, where costs of suicides are prohibitive for the poorest farmers, the benefits are more clearly seen in substantial yield increases when pests are controlled through technology. (p. 1 5742)

Herbicide tolerance is especially attractive to farmers in underdeveloped countries where most agriculturalists do not have access to farming machinery that is common in wealthier countries. Without machinery, farmers are forced to weed the crops by hand.

This takes up valuable time and energy, and often money as farmers must hire help to complete these tasks in a short period of time. Increased Lorraine also allows farmers to rid their crops of pests, such as moths, weevils and nematodes that are often detrimental to crops, particularly in East Africa and China, without harming crops with pesticides and herbicides (Delver, 2005). Traditional pesticide methods and continue destroying crops,

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one of the points critics bring when discussing biotechnological methods (McLaughlin, 2002).

In response to this, McLaughlin (2002) wrote that " Pathogen evolution is less able to overcome a changing environment or an environment made inhospitable by an array of resistant genes" (p. 166). In order for farmers to embrace this type of agriculture, we must first provide improved collaborative efforts between the scientists that produce these crops and the political leaders that hold the key to genetically modified crops being introduced to their respective societies.

Even developing countries recognize the need to avoid technological obsolescence and strive to profit from the most recent advances in technology. To be effective in advancing the frontiers of production, technology has to be compatible with specific ecological, socioeconomic, and cultural factors. At the same time, technologies that can help to purchase time and that will facilitate significant jumps in production and profit are of particular interest to developing countries (Examination, 1982).

Understandably, biotechnology has raised considerable hopes in that respect. Perhaps the most effective approach to crop improvement is a renewed effort to promote dialog between the scientists that produce genetically modified crops, the farmers who can implement them, and the political leaders who can effectively allow or deny the use of these crops within their countries. Increased allowance of use of these crops would spark investment and allow more funding for plant science, bringing even more solutions to the variety of problems that plague crop production.

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Governments need to be prepared to work with and benefit from new breakthroughs in biotechnology. First and foremost, governments must establish regulatory frameworks to guide the testing and use of genetically modified crops. These rules and regulations should be reasonable in terms of risk aversion and implementation costs so that science is not hobbled by excessively restrictive regulations. Much of the biotechnology research underway is in the private sector, the issue of intellectual property rights must be addressed appropriately.

Most certainly, agricultural scientists and leaders have a moral obligation to warn the political, educational, and religious leaders about the magnitude and seriousness of the inevitable land, food, and population problems that lie ahead, even with breakthroughs in biotechnology. Failing to do so would be negligent, but our political leaders must realize that global food insecurity will not disappear without new technology. Political leaders must also realize that implementation of these practices are most effective when they begin on an extremely localized level.

Mach (2001) suggests implementation from the bottom of the ladder, or small farms, and working up to the top of the ladder, or large commercial farms. Ideally, this would ensure that changes could be made on a smaller scale while avoiding a quick-fix approach. In reference to crop production and biotechnology in Africa, Manning (2000) wrote that one way to feed the increasing world population is to help "third world scientists to feed their own people, while ensuring sensitivity to culture and environment that we missed in the first green revolution" (p. 18). In reference to the sensitivity

needed when teaching these new methods to established farmers, it is important to remember that they are practices, experiences, techniques and knowledge of the crops they cultivate that stretches centuries. In this regard, it must also be remembered that the hope that biotechnology offers to end hunger in these communities belongs to the farmers that implement them, not only the scientists that develop them (Mach, 2001).

Equally important to the success of biotechnology is that scientists and extensions interact with farmers to attain acceptance and use of new technologies for sustainable food production and development. Without education and acceptance by farmers, implementation of these programs will fail and without encouragement and allowance by local and national government leaders, provincial farmers will not ever get the opportunity for education and acceptance. When considering the benefits of biotechnology in agriculture, it would be irresponsible not to include the aid that would come from increased exports and decreased prices on imports.

Countries that rely prominently on imports could benefit considerably through lower prices and increased availability of the products they need. It would also increase developing countries ability to export more items, in turn creating more revenue and forging an increased dependency on them by other countries (Abdullah, Trans, Berry, & Foster, 2003). This can be a driving point for politicians and one that must be well explained in order for them to realize the possibilities that can come from such advances.

Factoring the possibilities of potential growth for a variety of crops in a nation is the first step to predicting the changes that come with

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increased production. The amount of growth effects supply, which has a direct impact on profit margins. Being able to calculate the potential monetary value of investments will give government bodies a greater understanding of why it is necessary to allocate more budgetary funds to these areas. An increased budget allows for more experimentation, implementation, and success for local crop growers.

The world population is expected to continue increasing through 2050, all the while putting a greater strain on food supplies (Abdullah et al. 2003). It stands to be inarguable that world hunger is a problem that must be significantly decreased, at the minimum, with an ultimate goal of eradicating it completely. Integrative Framework In order to approach the problems that affect our world, it is important that we have a better understanding of the diverse cultures within it and the problems that such diversity can create when trying to find solutions for common issues.

It can be tempting to look at issues within a society and approach problems with standardized solutions, ones based on statistics and equations. That approach would fail to insider each differing values, cultures, diversification and ethnicities of each area in addition too range of geographical and climatic variances. Culture can be described as " an integrated system of learned behavior patterns which are characteristic of the members of a society and which are not a result of biological inheritance" (Hobble, 1966).

In other words, characteristics of one's culture are taught through experience, passed through teaching one person by another, instead of being passed on through genetics. The idea behind what creates a culture is

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based upon intangible things, such as language, gender roles and customs. A failure to recognize and understand the meaning of these cultures would almost certainly guarantee failure when attempting to integrate new technology and ideas.

Even with proven profit through might be the most difficult part this theory would face. Farmers have passed their methods down through generations, teaching their children and grandchildren how to cultivate crops, prevent the spread of pests, and harvest in the most time effective way possible with the tools and resources that are available. These methods are valued within communities and families alike, but there must be improvements made in order to increase production and decrease world hunger.

Leading an interdisciplinary team requires someone who is capable of motivating team members to devote themselves to achieve something exceptional, especially when the goal is to accomplish a task as significant as eliminating world hunger. It is important to define the values and beliefs that the mission will be based on and then continuously lead a team based on those same values, displaying them with every action and decision that is implemented. With an objective as ambitious as ending hunger across the globe, inspiring others to share and maintain a passionate vision is essential.

This is not a Journey that will be completed in mere months - it will likely take decades to wholly complete - so it is crucial to have the desire and ability to renew inspiration and provide encouragement to team members as time passes. As a leader, it is also important to give your team members the tools and encouragement they need in order to reach their potential, cultivate

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trust, and build relationships. With a vision as large as ending world hunger, the most important quality of a successful leader is having the drive to search for innovative and ground breaking solutions to reach the goal.