

Global Food Security: The Role of Agricultural Biotechnology—Commentary

Borlaug NE (2000) Ending world hunger. The promise of biotechnology and the threat of antiscience zealotry. *Plant Physiol* **124**: 487–490

Food security has been a major and fast-growing concern worldwide. Following the 2008 food price crisis, which caused social and political unrest in several developing nations, there is a renewed sense of urgency and commitment among political and scientific communities toward increasing food production and meeting the challenges of an ever-increasing world population set to reach the 9 billion mark by 2050. In the current scenario, maximizing crop productivity on existing farmlands is the only logical way to address food security concerns, as the amount of arable land is unlikely to increase in the future. Genetically modified (GM) crops have the potential to eliminate food insecurity by increasing agricultural crop productivity and reducing crop loss.

Almost a decade ago, *Plant Physiology* published a collection of editorials featuring the opinions of many eminent agricultural scientists on “Genetically Modified Crops.” Although all of these articles are highly informative, one article, “Ending world hunger. The promise of biotechnology and the threat of antiscience zealotry,” captured wide attention as it was written by Nobel Laureate Dr. Norman Borlaug, the father of the green revolution. In this thought-provoking article, Dr. Borlaug discussed the importance of crop biotechnology and highlighted its vast potential in developing disease and pest resistance, herbicide tolerance, drought and salinity tolerance, enhancing fertilizer and water use efficiency, and improving the nutritional quality of food crops. Dr. Borlaug, while confirming the ability of innovative agricultural technology to feed the planet’s exploding

population, narrated his concern about whether the products of biotechnology research would be allowed to be used by farmers in the face of adversity from antibiotechnology extremists who create popular bias against the use of GM products and private sector interests who create intellectual property right barriers that deny access to the technology or its products. He further highlighted the need for the establishment of regulatory frameworks to guide the testing and use of GM crops as well as safeguarding the interest of the farming community by addressing intellectual property rights issues. In the past decade, despite the support of the Vatican, many national academies of science, and more than 3,400 international scientists who have signed the “declaration of support for agricultural biotechnology,” the acreage of GM crops has increased only marginally, from 110 million acres in 2000 to 300 million acres in 2008, in the context of approximately 3,300 million acres under cultivation globally. GM crops are as natural and safe as today’s bread wheat, opined Dr. Borlaug, who also reminded agricultural scientists of their moral obligation to stand up to the antiscience crowd and warn policy makers that global food insecurity will not disappear without this new technology and that ignoring this reality would make future solutions all the more difficult to achieve. Even today, 10 years after its publication, the contents of this article remain just as relevant, given the success of the anti-GM movement and the lack of food security. Thus, republishing this article as part of “*Plant Physiology* 25,000th Article Classics Collection” would be a fitting tribute to the achievements and efforts of the late Dr. Borlaug, who through his research and advocacy inspired many and tried to ease negative perceptions of GM crops.

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