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Give Farmers the Real Products of Agricultural Biotechnology

By James Wachai

To demonstrate his frustration with the way opponents of modern agricultural biotechnology distort

scientific facts to discourage farmers in developing countries from embracing genetically modified crops, Calestous Juma, a professor of Practice of International Development at the John F. Kennedy School of Government, Harvard University, in an opinion article in Economic Perspectives - a journal of the U.S. Department of State, lamented that much of the debate on the role of biotechnology in developing countries is based on hypothetical claims with no real products in the hands of consumers and producers.

"...rebutting the claim of critics is not as important as presenting the benefits of real products in the market place," wrote Prof. Juma, a fervent advocate of modern agricultural biotechnology as a tool to alleviate poverty in poor countries.

Here, Prof. Juma was challenging scientists the world over to move from theoretical posturing about genetically modified crops and give consumers and producers the real products.

Scientists from the developing world must heed Prof. Juma's challenge. The truth is that scientists, especially those in developing countries, have not done enough to help their farmers realize the real benefits of genetically modified crops. Most are always cocooned in labs, conducting never-ending experiments on genetically modified crops.

In a report released last week, scientists in developing countries were found to be completely detached from the needs of those who depend on agriculture for livelihood.

The report entitled, Will Agbiotech Applications Reach Marginalized Farmers? Evidence from Developing Countries, found that research and development in agricultural biotechnology (agribiotech) is fraught with impediments.

Key among them is that dissemination of agribiotech research and genetically modified (GM) crops to resource-poor, small-scale farmers in developing countries is almost non-existent.

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As Prof. Juma notes in his article in the Economic Perspectives, those opposed to modern agricultural biotechnology have and will continue the lack of real products - genetically modified crops - to confuse farmers.

The ball is now in the court of scientists from developing countries. Developed countries are reaping a lot from genetically modified crops because research organizations heading up much of the agbiotech research are able to offer real products of genetic engineering to their people.

James uses his communication expertise to create awareness about GM food. To read more about him, go to

<http://www.gmoafrica.org>

The Benefits Of Agricultural Biotechnology

By George Royal

Agricultural biotechnology is any technique in which living organisms, or parts of organisms are altered to make or modify agricultural products, to improve crops, or develop microbes for specific uses in agricultural processes. Simply put, when the tools of biotechnology are applied to agriculture, it is termed as "agricultural biotechnology". Genetic engineering is also a part of agricultural biotechnology in today's world. It is now possible to carry out genetic manipulation and transformation on almost all plant species, including all the world's major crops.

Plant transformation is one of the tools involved in agricultural biotechnology, in which genes are inserted into the genetic structure or genome of plants. The two most common methods of plant transformation are Agrobacterium Transformation – methods that use the naturally occurring bacterium; and Biolistic Transformation - involving the use of mechanical means. Using any of these methods the preferred gene is inserted into a plant genome and traditional breeding method followed to transfer the new trait into different varieties of crops.

Production of food crops has become much cheaper and convenient with the introduction of agricultural biotechnology. Specific herbicide tolerant crops have been engineered which makes weed control manageable and more efficient. Pest control has also become more reliable and effective, eliminating the need for synthetic pesticides as crops resistant to certain diseases and insect pests have also been engineered. Phytoremediation is the process in which plants detoxify pollutants in the soil, or absorb and accumulate polluting substances out of the soil. Several crops have now been genetically engineered for this purpose for safe harvest and disposal, and improvement of soil quality.

According to the USDA (United States Department of Agriculture)'s National Agricultural Statistics Service (NASS), in reference to a section specific to the major biotechnology derived field crops, out of the whole crop plantings in the United States in 2004, biotechnology plantings accounted for about 46 percent for corn, 76 percent for cotton, and 85 percent for soybeans.

Modern agricultural biotechnology has now become a very well–developed science. The use of

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synthetic pesticides that may be harmful to man, and pollute groundwater and the environment, has been significantly lessened with the introduction of genetically engineered insect-resistant cotton. Herbicide-tolerant soybeans and corn have also enabled the use of reduced-risk herbicides that break down more quickly in soil. These are nontoxic to plants or animals, and herbicide-tolerant crops help preserve topsoil from erosion since they thrive better in no-till or reduced tillage agriculture systems. Papayas resistant to the ringspot virus were also developed through genetic engineering, which saved the U.S. papaya industry.

Agricultural biotechnology may also be helpful in improving and enhancing the nutritious quality of certain crops. For example, enhancing the levels of beta-carotene in canola, soybean, and corn improves oil compositions, and reduces vitamin A deficiencies in rice. There are also researches going on in the field of biotechnology to produce crops that will not be affected by harsh climates or environments and that will require less water, fertilizer, labor etc. This would greatly reduce the demands and pressures on land and wildlife.

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