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### NOTICE BOARD (6)

## **AFRICA**

### **STUDY SHOWS BENEFITS OF PUSH-PULL AGRICULTURE FOR AFRICA**

[http://www.bbsrc.ac.uk/media/releases/2008/080108\\_pests.html](http://www.bbsrc.ac.uk/media/releases/2008/080108_pests.html)

A study conducted by the Rothamsted Research shows that push-pull approach on agriculture has a great potential of saving African crops from pests. Push-Pull approach entails mixing, in the field, crops that repel insects (push) and diversionary trap plants (pull) that attract the pests. In areas where the approach has been adopted, like Kenya, Uganda and Tanzania, the profit a farmer can produce per hectare has increased by between three and four times the amount generated by

standard practices. Farmers in these regions do not have the resources or predictable rainfall needed to invest in fertilizers and pesticides.

More than 10,000 subsistence households in Eastern Africa have adopted the approach, but the overall proportion is still small. Lead researcher John Pickett pointed out that if more subsistence farmers used 'push-pull' approaches, there could be massive improvements in the amount of food they could grow. The research team is currently promoting the approach in West Africa.

## **GLOBAL**

### **GM FOOD AND INTERNATIONAL TRADE**

<http://www.ifpri.org/pubs/dp/ifpridp00740.asp>

The gains associated with the adoption of GM food crops largely exceed any type of potential trade losses says a discussion paper on "Genetically modified food and international trade: The case of India, Bangladesh, Indonesia and the Philippines" published by the International Food Policy Research Institute (IFPRI).

Guillaume Gruere and colleagues note that adopting GM crops also allows net importing countries to greatly reduce their imports. GM rice is identified to be the most advantageous crop for the four countries. They also state that segregation of non-GM crops can help reduce any potential trade loss for GM adopters. The opportunity cost of segregation is much larger for sensitive importing countries than for countries adopting new GM crops. This suggests that sensitive importers will have the incentive to invest in separate non-GM marketing channels if exporting countries like India decide to adopt GM food crops.

### **CONSEQUENCES OF EU REGULATION**

[v.moses@qmul.ac.uk](mailto:v.moses@qmul.ac.uk)

The European Union's regulatory process for transgenics is very slow and complex. As a result, there are many important economic and related consequences of this development. Dr. Vivian Moses, professor of King's College in the United Kingdom, shared this insight in a workshop for public officials on food safety assessment of GM crops in Dai Lai, Vinh Phuc Province in Vietnam.

In a presentation on "GM agriculture in context: What is being regulated and why", Moses enumerated a few of these consequences:

- European farmers are denied use of the best technologies
- European consumers are denied choice
- Emotional, non-scientific arguments battle against evidence-based reasoning; and
- Plant sciences as an academic subject has declined with frustrated scientists moving to North America

### **GM CROP BAN IN EUROPE IS COUNTERPRODUCTIVE**

<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1746-692X.2007.00075.x>

By denying farmers access to potentially cost-reducing technologies, banning GM crops could be counterproductive for the future competitiveness of European Union agriculture. This was forwarded by Matty Demont, associate principal staff agricultural economist of the Consultative Group on International Agricultural Research (CGIAR) Africa Rice Center and colleagues in "GM Crops in Europe: How Much Value and for Who?" published in the December 2007 issue of the journal EuroChoices.

The authors reviewed the global impact literature and assessed the potential value of GM crops for Europe, in addition to studies on GM maize, sugar beet and oilseed rape in Spain, Hungary, the Czech Republic and the EU. They found out that the potential annual value of GM technologies for single Member States ranges from €0.1 million to €42 million. Herbicide tolerant sugar beet was identified as the EU's most promising first-generation GM technology.

## **FAO ASSESSES GLOBAL BIOTECH CAPACITY**

[elcio.guimaraes@fao.org](mailto:elcio.guimaraes@fao.org)

A national plant breeding and associated biotechnology capacity assessment was conducted by the Food and Agriculture Organization (FAO) of the United Nations to enable actions to be proposed to strengthen national capacity in the use of plant genetic resources for food and agriculture. Results of the study reveal that:

- The number of plant breeders and biotechnologists and the trends vary among countries and regions without a global upward or downward tendency.
- The capacity to use biotechnology tools varies but the lack of linkages with applied plant breeding is a major issue.
- Allocations vary from crop to crop and from region to region.
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The survey, authored by Elcio Guimaraes of FAO and colleagues, was presented in several workshops where the main issues raised were capacity building as a main priority, access to plant genetic resources for food and agriculture, access to biotechnology tools, and awareness of plant breeding characteristics and their impact. The Global Partnership Initiative for Plant Breeding Capacity Building was launched to assist countries in strengthening their competence.

## **NEW IFAD PROGRAMS TO HELP OVERCOME POVERTY IN THE THIRD WORLD**

<http://www.ifad.org/media/press/2007/52.htm>

The International Fund for Agricultural Development (IFAD) Executive Board approved more than US \$263 million in loans and grants to help rural people in Asia, Africa and Latin America overcome poverty. This will include a US\$6.24 million grant to support agricultural research and development activities in rural regions of poor countries.

Angola, Malawi and Madagascar will receive US \$34.27 million in loans and US \$8.62 million in grants to help rural households and small scale farmers to increase their agricultural production and access to agricultural markets. Western and Central Africa will receive a total of US \$77.3 million in loan and grants. Likewise, China will receive a US\$30 million loan for developing approaches to reduce poverty in the Inner Mongolia Autonomous Region. The program, which will focus on selected sectors such as microfinance, organic farming and marketing, aims to reduce poverty in a sustainable and gender-equitable way. Azerbaijan and Djibouti will also receive grants and loans for the development of irrigation and farming infrastructures as well as for the establishment of a sustainable microfinance system.

Three non-Consultative Group on International Agricultural Research (CGIAR)-supported centers will also be given a US\$4.18 million grant. The centers are: the United Nations Office for Project Services' Asian Project Management Support and Regional Unit for Technical Assistance programs and Global Program to Address the Marginalization of Poor Farmers and Migrants in Ecuador, Morocco and Senegal through Market Linkages and the Promotion of Diversity.

## **WILD CASSAVA RELATIVES AS SOURCE OF STRESS-RESISTANCE GENES**

<http://www.embrapa.br/embrapa/imprensa/noticias/2007/dezembro/2a-semana/especies-silvestres-de-mandioca-sao-foco-de-pesquisa>

Scientists from the Brazilian Agriculture Research Corporation (EMBRAPA) have shown that wild cassava species harbor several stress and pathogen resistance genes. A project, in collaboration with the International Center for Tropical Agriculture (CIAT), now aims to transfer these genes to commercial cassava varieties. Led by Alfredo Cunha Alves, the scientists have started to identify molecular markers that will be used to transfer the resistance traits to high yielding cultivars. They are also starting the cytogenic characterization of the wild varieties. New stress-resistant cassava varieties are expected to be developed before the project ends in 2010. Scientists from CIAT have previously obtained cassava varieties resistant to the mealybug and whitefly by marker assisted selection.

## **AUSTRALIAN ACADEMY OF SCIENCE SUPPORTS GM**

<http://www.science.org.au/policy/gene-tech.htm>

The Australian Academy of Science issued a statement in support of "the responsible and ethical use of gene technologies to produce GM plants for use in Australian agriculture and works with governments, scientists, NGOs, international organizations and the community on all GM-related issues." The statement which was endorsed by the Council was prepared by T.J. Higgins on behalf of the National Committee for Plant and Animal Science.

Gene technology has significant benefits, the statement points out, but the "lack of uncertainty in an environment of manageable risk, should not be used as the reason to postpone measures where genetic modification can legitimately be used..." It concludes by saying that the Academy supports a thorough scientific evaluation of potential environmental impacts before the commercial release of any crop as a result of either traditional breeding or through the use of gene technology.

## **OTHER**

### **TESTING GM FOODS FOR ALLERGENECITY**

<http://www.nature.com/nbt/journal/v26/n1/abs/nbt1343.html#abs>

Genetically modified (GM) crops must first undergo rigorous safety evaluations before being released in the market. One important concern, which has drawn considerable public attention, is the assessment of transgenic crops for potential allergenicity. However, not all tests being applied in evaluating the allergenicity of GM crops have sound scientific basis, according to a paper published by the journal Nature.

The paper pointed out that certain principles or protocols, including those recommended by the Food and Agriculture Organization and World Health Organization, are inappropriate for assessing the allergenicity of GM crops. The authors presented recent case studies to illustrate the invalidity of techniques like:

- bioinformatics, wherein the potential allergenicity is predicted by comparing the protein sequences in databases
- use of animal models, which according to the authors, are not applicable for predicting human sensitization to food
- targeted serum screens, with potentially high rate of false-positive and low probability of true-positive results

The authors concluded that these methods might lead to rejection of safe and beneficial products, excessive costs and possible disruption of trade without any further reduction of risk. Likewise, the use of these methods can lead to introduction of products, which might appear safe, but actually does pose risks to allergic consumers. The authors also evaluated the Codex Alimentarius weight-of-evidence approach to evaluate the potential risk of food allergy.

### **STANDARDS NEEDED FOR DETECTING BIOTECH-DERIVED CROPS**

[ray.shillito@bayercropscience.com](mailto:ray.shillito@bayercropscience.com)

Testing to detect biotech-derived crops needs to be effective, consistent, and predictable along the supply chain to satisfy commercial intellectual property and or/traceability requirements. Test method developers need to validate methods using internationally acceptable approaches, to demonstrate they are "fit for purpose" and transferable to practical testing environments. These points were stressed by Dr. Ray Shillito, External Technical Support Manager - America, Molecular and Biochemical Analytical Services of Bayer CropScience, during a food safety assessment workshop in Dai Lai, Vinh Phuc Province, Vietnam.

in his talk on "Analytical techniques for detection of biotechnology-derived crops" Shillito emphasized the need for standards and standardization; as well as for appropriate testing thresholds based on the sampling and test precision needs. Shillito is chairman of the working group of the International Life Sciences Institute Food Biotechnology Committee that prepared the publication "Sampling and detection methods for products of modern agricultural biotechnology in NAFTA countries."

### **ORGANIC AGRICULTURE CAN HELP IN THE FIGHT AGAINST HUNGER, BUT....**

<http://www.fao.org/newsroom/en/news/2007/1000726/index.html>

The Food and Agriculture Organization (FAO) of the United Nations has no reasons to believe that organic farming can substitute for conventional farming systems in assuring the World's food security, said FAO director general, Jacques Diouf. Diouf made the statement after press releases and media reports suggesting that FAO endorses organic agriculture (OA) as the solution to world hunger.

Diouf pointed out that OA can help in the battle against hunger, as organic farming represents a growing source of income for many countries. But chemical inputs, especially fertilizers, are needed to boost agricultural production in developing countries particularly in Sub-Saharan Africa. The recent World Development Report by the World Bank stressed that low fertilizer use is one of the key constraints in African agriculture. Diouf cited Malawi as an example. The country, which has been a recipient of food aids for years, has boosted its maize production after adopting a policy of providing small scale farmers with seeds and fertilizers. He also noted that higher productivity with lower inputs can be obtained with systems like Integrated Pest Management and Conservation Agriculture.

The FAO director general concluded that there is no one solution to the problem of world hunger. He enumerated the key factors that will help solve the problem. These include: knowledge and capacity building, increased private and public investments and right policies and technologies.

### **CLIMATE CHANGE AND FOOD SECURITY**

<http://www.pnas.org/current.shtml#SF>

One of the great challenges of the 21<sup>st</sup> century will be to increase the global food and timber supply to accommodate a world growing to 10 billion or more people while undergoing climate change. Meeting the challenges brought about by climate change will require cooperation between different countries and institutions. The impacts of climate change in agriculture and forestry including its implications to food security is highlighted in a series of review papers published by the US Proceedings of the National Academy of Science (PNAS).

Within the developing world, adverse effects of climate change will fall disproportionately on the poor. It will most likely increase the dependency of developing countries on imports, especially in sub-Saharan Africa and South Asia. These regions will require help from the international community. The regions will benefit from: freer trade, which can help improve access to international supplies, investments in communication and transportation infrastructure, irrigation and promotion of sustainable agricultural practices. The reviews also enumerated possible strategies for adapting food and forestry production to climate change.

### **GENE FLOW FROM GM CROPS LESS LIKELY TO HARM THE ENVIRONMENT**

<http://www.cast-science.org/>

Gene flow, the movement of genes from one population to another, has always occurred naturally. However, it has attracted much attention during the past decades, particularly in the advent of modern crop biotechnology. Commercialization of transgenic crops increased the interest of understanding and managing gene flow. A new issue paper published by the Council for Agricultural Science and Technology (CAST) offers insights regarding the gene flow potential and economic implications of transgenic crops.

The paper addresses several issues ascribed to gene flow. These include: gene transfer ramifications of traits introduced to GM crops, adventitious presence and its relation to gene transfer, containment approaches for the mitigation of gene flow and regulatory and risk assessment mechanisms for biotech crops.

Task Force Chairman David Gealy of the USDA Agricultural Research Service pointed out that genes introduced to GM plants will have little to no effects on the dynamics of gene flow, especially outside agricultural fields. He also noted that pre-commercialization procedures that take into account the specific trait being introduced will help minimize the impacts of gene flow.

### **USING INDUSTRIAL BIOTECH SAVES ENERGY AND COMBATS CLIMATE CHANGE**

<http://pubs.acs.org/cgi-bin/sample.cgi/esthag/2007/41/i22/pdf/es062559q.pdf>

The use of renewable energy to combat climate change and the possible depletion of fossil energy was recently studied by a group of scientists headed by G. B. Herman of Utrecht University, Netherlands. The study analyzed the current and future technology routes leading to the development of 15 bulk chemicals using industrial biotechnology. The calculated CO<sub>2</sub> emission and fossil fuel energy use showed that a savings of more than 100% nonrenewable energy use and greenhouse gas emissions are already possible with the current state of the art biotechnology. It is however predicted that further savings are possible with future improvements in fermentation and downstream processing.

To maximize savings, the study recommended that sugarcane, lignocellulosic materials, and cornstarch be used as feedstocks. The products with the highest savings using industrial biotechnology are acrylic acid, butanol, ethanol, ethylene, 1,3- propanediol and polyhydroxyalkanoates. It is apparent from the results of the study that using industrial biotechnology to produce bio-based chemicals can contribute to the reduction of climate change and the depletion of fossil energy.

#### **NOTICE BOARD**

**May 2008** - An International Seminar on Biotechnology for the Agriculture Sector (Seminario Internacional sobre Biotecnología para el sector Agropecuario) is scheduled to be held in Bogota Colombia. Seminar information may be obtained by emailing [jfernandomarin@yahoo.es](mailto:jfernandomarin@yahoo.es)