

BioLines

Where Nature and Science Meet

biolines@mweb.co.za

Vol. 87

August 2006

Editors: Dr Dave Keetch & Remi Akanbi

BioLines is AfricaBio's 'Biotechnology Headlines' – a quick guide to what is topical. By design, the articles are not exhaustive, but references are given to follow up points of interest. Let us know what you like and dislike about **BioLines** and what you want to see as part of this service. Articles are edited and some shortened to meet space requirements. It is not the intention of this service to infringe on copyright. **BioLines** is issued free of charge and every effort is made to acknowledge the source of information.

AfricaBio

**Biotechnology Stakeholders
Association**

Tel: 012 667 2689

Fax: 012 667 1920

www.africabio.com

CONTENTS:

- ◆ **LEADERS RESOLVE TO HARNESS BIOTECHNOLOGY TO DEVELOP AFRICA(1)**
- ◆ **CROSS-CONTINENT SURVEY ON GM FOOD CONDUCTED (2)**
- ◆ **AFRICA RICE CONGRESS YIELDS RESOLUTIONS ON FOOD SECURITY (2)**
- ◆ **MOTION SEEKING TO BAN GMOS IN KENYA DEFEATED (2)**
- ◆ **BRAZIL AND GHANA SIGN ACCORD (3)**
- ◆ **ETHIOPIA AND U.S. SIGN GRANT AGREEMENT (3)**
- ◆ **UGANDAN SPEAKERS CALL FOR RESEARCH SHARING (3)**
- ◆ **MEDIA, CIVIL SOCIETIES AND NGOS MEET NEPAD ON BIOTECH (3)**
- ◆ **UGANDA BEGINS IMPROVING AGRI, INDUSTRY FOR BETTER ECONOMY (4)**
- ◆ **SOUTH AFRICA DEPUTY MINISTER COMMENDS COUNTRY'S BIOSAFETY REGIME (4)**
- ◆ **LATEST ESTIMATED PLANTINGS OF GM CROPS IN SOUTH AFRICA (4)**
- ◆ **GHANA PROJECTS TO MOVE AGRI, BIOTECH FORWARD (5)**
- ◆ **CLINTON FOUNDATION SUPPORTS AFRICAN FARMERS(5)**
- ◆ **SCIENCE FOR FOOD(6)**
- ◆ **SOUTH AFRICAN RADIO POLL SHOWS SUPPORT FOR GM FOOD (7)**
- ◆ **IMPROVED MAIZE AND WHEAT VARIETIES LOWER FARMERS' RISKS (8)**
- ◆ **IMPROVED MAIZE AND WHEAT VARIETIES LOWER FARMERS' RISKS (8)**
- ◆ **EVOGENE, BIOGEMMA UNITE FOR DROUGHT-TOLERANT MAIZE (8)**
- ◆ **DANFORTH TO LEAD CASSAVA SEQUENCING PROJECT (9)**
- ◆ **BIOFUELS TAKE CENTER STAGE (9)**
- ◆ **RESEARCH TRACKS AGBIOTECH PROGRESS FOR DEVELOPING COUNTRY FARMERS (10)**
- ◆ **SCHEME TO PROMOTE SUSTAINABLE AGRICULTURE IN DEVELOPING COUNTRIES (10)**
- ◆ **THE TRUTH ABOUT: (11)**
- ◆ **NOTICEBOARD (12)**

NEWS FROM AFRICA

LEADERS RESOLVE TO HARNESS BIOTECHNOLOGY TO DEVELOP AFRICA

dotunge@absfafrica.org

African governments have resolved to harness biotechnology in order to develop Africa's rich biodiversity, improve agricultural productivity, and develop pharmaceutical products within the framework of the New Partnership for Africa's Development (NEPAD). The African Union-appointed High-Level African Panel on Modern Biotechnology, headed by Prof. Calestous Juma of Cambridge University, USA, made this announcement during a recent series of consultative meetings with various stakeholders in Nairobi, Kenya.

The panellists unveiled a preliminary report on the role of modern biotechnology in the transformation of African economies, which examines how benefits of biotechnology can be tapped by African countries. The report focuses on how best to build the capacity needed by the continent

to harness and apply the technology to improve agricultural productivity, public health, industrial development, and economic competitiveness, among others.

The report concludes that regional cooperation is essential to address possibilities and issues associated with biotechnology and genetic modification. Regional economic integration bodies should play a key role in mobilizing, sharing, and using existing scientific and technological capacities, including human and financial resources, as well as physical infrastructure for biotechnology research and development, and innovation on the continent. They argue that international partnerships in biotechnology are critical to the realization of Africa's biotechnology strategies and should be actively pursued.

CROSS-CONTINENT SURVEY ON GM FOOD CONDUCTED

<http://www.synovate.com/current/news/article/2006/08/gm-foods-8211-delight-or-fright.html>.

About 62% of South Africans and 43% of Singaporeans who are familiar with GM foods are accepting of the technology, as long as it makes food taste better. This is one of the findings of a recently concluded survey by Synovate, a global market research company, which surveyed 3,127 respondents in Greece, Indonesia, Poland, Singapore, and South Africa.

Other findings of the survey include the following:

- 84% of Greeks and a majority of respondents in South Africa and Poland are familiar with GM foods, while 92% of Indonesians and 65% of Singaporeans are not familiar with the term;
- among the consumers who are aware of GM foods, 89% of those from Greece, 68% from Poland, 59% from Singapore, 66% from Indonesia, and 33% of South Africans believe they may be harmful; and
- despite these cautious feelings, 46% of Indonesians, 45% of South Africans, and 42% of Poles and Singaporeans believe that the benefits of GM foods outweigh the risks.

AFRICA RICE CONGRESS YIELDS RESOLUTIONS ON FOOD SECURITY

<http://allafrica.com/stories/200608040086.html> and

<http://allafrica.com/stories/200608070373.html>

Rice should be one of the cornerstones of a Green Revolution for Africa, and this can be achieved through a new and better capacity-building program focusing on the development of a multi-disciplinary cadre of scientists. In line with this, equal attention should be urgently given to four areas: policy, capacity building, technology development and transfer, and infrastructure. This was one of the resolutions reached at the recently concluded Africa Rice Congress in Dar es Salaam, Tanzania.

Other resolutions were adopted, among them measures to accelerate farmer adoption of New Rices for Africa (NERICA) varieties and other improved technologies through concerted actions by a broad partnership, including governments, research institutions, NGOs, the private sector, and local, regional, and international organizations. The Congress participants also urged African governments to support their rice farmers, instead of becoming increasingly dependent on external supply for rice.

Leading scientists attending the Congress also mentioned that new farming technologies being introduced to the continent benefited mainly men, many of whom had left their rural homes for urban centers. Dr Tunji Akande, a rice policy analyst, said the scenario has adversely affected the production of rice in countries like Kenya, where more than 60% of labor in rice fields are provided by women.

MOTION SEEKING TO BAN GMOS IN KENYA DEFEATED

Dr Margaret Karembu (m.karembu@cgiar.org) or Daniel Otunge (d.otunge@absfafrica.org)

Kenyan parliamentarians have voted overwhelmingly to reject a motion seeking to ban GMOs from the country. Leading the move against the motion was Alego Usonga MP, Sammy Weya, who together with other legislators recently completed a study tour of South African biotech crop fields. Mr. Weya argued that technology was the key to any country's development and therefore it would be wrong for Kenya to outlaw it. He called on Kenyans to emulate South Africans who have

commercialized GM crops, and are investing heavily on biotech research. "Kenya will lag behind in food production if we continue using traditional methods in our farming systems," he said.

Most MPs who supported biotechnology called on the government to bring the Biosafety Bill to parliament to clear the way for commercialization of GM crops in the country. "We need policies to guide us on how to introduce this technology to our farmers," they said.

Dr Enoch Kibunguchy, an assistant minister for Health, also rejected the motion saying that it sought to confine the poor to perpetual poverty. He said Kenya needs to maximize production of foods to eliminate dependence on relief foods. However, he noted that this would not be possible without the use of new technologies that can eliminate the threat of pests and diseases that affect crops. "Those of us who grow maize sometimes lose up to 50% of our maize to stem borer. If science can be applied to take care of a pest like that, we will be very grateful because we can save up to 50% of our crop".

BRAZIL AND GHANA SIGN ACCORD

http://www.embrapa.br/noticias/banco_de_noticias/folder.2006/foldernoticia.2006-07-03.1126368809/noticia.2006-07-10.8962230062/mostra_noticia

The first Regional Office of the Brazilian Agricultural Research Corporation (EMBRAPA) will soon open in Accra, Ghana. Brazil and Ghana recently signed an agreement for the creation of EMBRAPA Africa, which will engage in technical assistance and training, and in the development of human resources, under the auspices of the Brazilian Ministry of Agriculture, Livestock, and Food Supply.

"For its importance in the fight against hunger and poverty, we decided to establish, in Accra, the first office of EMBRAPA in Africa. The partnership also aims to act in another field of strategic importance: energy alternatives, a field of strong social impact as it generates income and employment, reduces the emission of pollutants, and decreases dependency of imported fuels", explained Luiz Inácio Lula da Silva, president of Brazil.

This bilateral cooperation between Ghana and Brazil will focus on technology transfer in the area of tropical agriculture, including grains, vegetables, fruits, pastures, and livestock.

ETHIOPIA AND U.S. SIGN GRANT AGREEMENT

<http://www.ena.gov.et>.

Ethiopia and the United States have signed a grant agreement in support of ongoing U.S.-Ethiopian partnership programs under USAID. The agreement was signed by Mekonnen Manyazewal, Ethiopia's State Minister of Finance and Economic Development, and Glenn Anders, USAID Mission Director, and amounts to US\$ 57.6 million.

USAID partnership programs in Ethiopia are carried out to reduce vulnerability to disease, improve quality of primary education, ensure food security, and end poverty and hunger. About US\$ 15.6 million of the grant will be used to fund existing and new programs promoting market-led economic growth, particularly in the food, livestock, and agriculture sectors.

UGANDAN SPEAKERS CALL FOR RESEARCH SHARING

<http://allafrica.com/stories/200608010182.html> and
<http://allafrica.com/stories/200607240313.html>.

Hilary Onek, Uganda's Minister of Agriculture, has called on local research bodies to share their output and results with farming communities in order to increase the country's agricultural productivity. He announced this as he presided over the closing ceremonies of the 14th Source of the Nile Agricultural and Trade Show, held recently in Jinja, Uganda.

State Minister for Agriculture in Charge of Animal Industry, Maj. Bright Rwamirama, was also at the same function. He said that displays at the show had proved that good research has been conducted, and what remains is for farmers to be given information and resources to allow them to engage in farming as a business.

MEDIA, CIVIL SOCIETIES AND NGOs MEET NEPAD ON BIOTECH

dotunge@absf.org.

The African Union (AU) and the New Partnership for African Development (NEPAD) has been challenged to integrate the media, civil societies, and non-governmental organizations in their quest to involve the public on biotechnology issues. The groups, who were presenting their views to the AU/NEPAD high-level committee on biotechnology consultation forum in Nairobi, noted that Africa has failed in proper utilization of modern technologies due to misinformation from interest groups.

John K. Mutunga the national coordinator of Kenya National Federation of Agricultural Producers (KENFAP) said that African farmers were willing to adopt various upcoming scientific methods to promote better crops production, but were being hindered by lack of information.

In her contribution, the Director of International Service for acquisition of Agri-biotech Applications (ISAAA) Afri-Center Dr. Margaret Karembu advised Africans to work towards integrating national priorities with global goals. She also cautioned African policy makers against making unrealistic regulatory systems with the intention of blocking the multinationals, noting that the same laws will also be a hindrance to local researchers.

UGANDA BEGINS IMPROVING AGRI, INDUSTRY FOR BETTER ECONOMY

<http://allafrica.com/stories/200608010077.html> and

<http://allafrica.com/stories/200608010075.html>.

Uganda's government is now taking steps to improve the country's agriculture and industry sectors. In a statement, President Y.K. Museveni said that the promotion of research and scientific innovation would be one of his priorities in the next five years. In addition to this, Finance Minister Dr. Ezra Suruma announced that a total of US\$ 4.3 million will be allocated to research, in recognition of the role of science in transforming economies.

Dr. Suruma also announced that negotiations were underway for a \$30 million loan from the World Bank-funded Millennium Science Initiative to finance industrial research and advanced technical training for students. Agriculture being the mainstay of Uganda's economy, the government underlines the need for substantial research and industrialization efforts for the agricultural sector within the wider Plan for modernization of Agriculture project.

SOUTH AFRICA DEPUTY MINISTER COMMENDS COUNTRY'S BIOSAFETY REGIME

<http://www.businessday.co.za/articles/topstories.aspx?ID=BD4A243447>.

The South African government's commitment to public safety is supported by ongoing efforts to enhance the country's capacity to harness the potential of biotechnology to benefit the poor, but without undermining biosafety. This was expounded on by Derek Hanekom, South Africa's deputy science and technology minister, in his column, which appeared recently in Business Day.

Entitled "South Africa: Cautiously Sowing the Seeds of Change," the article takes a look at recent measures by the country to ensure the balance of biotechnology and related research, with the government's responsibility of keeping people and environment safe. Hanekom states that South Africa, as a whole, must recognize that Africa's "orphan crops" are not "points of interest" for multinational companies, so "if we want to produce improved varieties of crops that have evolved here, we will have to do so ourselves".

"Africa's food insecurity means developing agriculture is an important objective. Genetic modification technologies -- with potential for pest resistance, drought and herbicide tolerance, as well as improved nutritional characteristics -- must surely be part of the solution?" concluded Hanekom.

LATEST ESTIMATED PLANTINGS OF GM CROPS IN SOUTH AFRICA

Wynand J. van der Walt, wynandjvdw@telkomsa.net

Planting of GM maize increased its market share from 14.6% of total South African maize planted in 2005 to 29.4% in 2006, according to a survey submitted by FoodNCropBio to the Maize Trust this

week. The major unique trait remains insect resistance with 72% of total GM maize, while herbicide tolerant maize now stands at 28%. Actual hectares planted increased by 11% to 455 287 ha despite total maize area having slumped by 45%.

This increase builds upon past trends that amounted to 42% GM maize growth in 2003, 44% in 2004 and 20% in 2005. White GM maize showed the most dramatic increase from 8.6% of total white maize area in 2005 to 28.8% in 2006. Yellow GM area planted grew from 24% to 30.5% of total yellow for the same period.

It is clear that farmers gain benefit from GM technology. Nevertheless, co-existence of GM and conventional maize farming has been accepted. Some farmers grow conventional maize under contract with buyers who serve non-GM markets, while various agri-businesses retain separate storage facilities for non-GM grain. Standards for identity preservation have been finalized so that certification of non-GM will be possible.

Herbicide tolerance in GM soybeans has been the global driving factor in conservation farming by reducing ploughing and tilling practices. The share of GM soybean area planted was estimated at 135 000 hectares or 59% of total soybeans, about the same as for the 2005 crop. Use of farm-saved seed continues to increase and may create problems for future non-GM production due to risk of seed mixing.

The anticipated increase in cotton area did not materialize due to low local cotton prices, aggravated by drought at planting time. The share of GM cotton remains at 90 to 92% of the total. The stacked traits of insect resistance and herbicide tolerance, only approved for commercial release by government in September 2005, realized a 40% market share in its first year. Varieties with only insect resistance had a 39% share and those with only herbicide tolerance stood at 13% share. The remaining 8% was planted to conventional cotton.

Total area planted to the three GM crops came to over 609 000 ha, up 18* from the 2005 area of 515 000 ha.

The survey on GM maize conducted by FoodNCropBio was supported by a grant from the South African Maize Trust.

GHANA PROJECTS TO MOVE AGRI, BIOTECH FORWARD

<http://www.ghana.gov.gh/news/article.php?id=0000016050>

http://www.mcc.gov/public_affairs/press_releases/pr_071206_Ghana.shtml

The Ghanaian government has provided equipment to two research institutes of the country's Council for Scientific and Industrial Research (CSIR) to enable them to undertake research into biotechnology. The Crop Research Institute, Kumasi, will serve the institutes of the Northern Sector, and will assist in the development of research and capacity building geared toward the improvement in crop yields and disease resistant crops. The Animal Research Institute, Accra, on the other hand, will serve the research institutes of Ghana's Southern Sector, and will be used to build capacity in the livestock industry. All facilities will be fully operational after Ghana's cabinet passes the country's Biosafety Framework.

In related news, the Millennium Challenge Corporation (MCC) has approved a five-year, approximately US\$547 million, anti-poverty program in Ghana. The program, Compact, will focus on rural agriculture, transportation, and community development initiatives, and will include improvement of land tenure and credit access for small farmers and agribusinesses.

CLINTON FOUNDATION SUPPORTS AFRICAN FARMERS

<http://www.clintonfoundation.org/071606-nr-cf-ee-cgi-hs-ai-rwa-fe-clinton-moves-to-help-out-farmers.htm>.

Former US President Bill Clinton has pledged fertilizers and irrigation support systems to Rwandan farmers, in an effort to end famine in the country. He also announced his support for the country's national health and agriculture development programs, and said that the two sectors were directly inter-dependent.

According to, Mr. Ira Magaziner, Chairman the Clinton Foundation's policy board, the agriculture program would last at least ten years. "We are trying to create more productivity on the land by irrigation, trying to lower the price of fertilizers and making fertilizers more available ... and such other things that increase agricultural produce," he added.

SCIENCE FOR FOOD

The Nation, Malawi - Chichiri, Blantyre, Malawi by Mzati Nkolokosa, 28 July 2006;
mzatinews@yahoo.com

The famine of 2001 was a double-edged sword in Southern Africa and Malawi was a typical example. On one side, people were dying of hunger-related illnesses. On the other, government was being accused of accepting genetically modified (GM) relief maize. Zambia, which was starving as well, was praised for rejecting GM maize because as Mwananyada Lewanika, a biochemist at the Institute for Science and Technology said "GM maize is risky to people".

This was bought by a network of international organisations. Here, the Malawi Economic Justice Network (MEJN) brought 10 African countries to a conference where GM foods were condemned, saying people were supposed to be warned of the dangers of consuming such foods and that Malawi was supposed to reject the maize. Government was compelled to mill the maize to prevent people from planting the seed because, as people speculated, GM maize had the ability to kill other crops.

But GM crops are not that bad as I discovered on a fact finding mission in South Africa where I went about the country, visiting GM maize and cotton farmers. In fact, the right name is genetically improved (GI) or biotechnology-applied biology that uses any living system to produce something useful using the latest tools and techniques.

"Science is for the benefit of people," said Professor Diran Makinde of AfricaBio, an independent, non-profit biotechnology stakeholders association whose role is to provide accurate information and create awareness on biotechnology in South Africa and the region. "A scientist cannot give people something that will destroy them. That is not science."

Makinde was speaking when he introduced biotechnology to parliamentarians, journalists and scientists from Malawi and Kenya. The audience was all silent, marvelling at the presentation. Biotechnology, said Makinde, is the science of improving crops and animals by taking genes from any source into another organism. This technology, although known to most Malawians a couple of years ago, has been around for decades and been useful in sewerage and compositing, making of bread, wine, beer, medicinal plants and vaccine. A typical example is medicinal trees. If a medicinal tree in North Pole cannot grow in Malawi, scientists can take the genes to a species in Malawi, put that gene in a miombo, to produce the same effect as the medicinal tree of the North Pole. That is how biotechnology works. That is what scientists have done with maize and cotton, for example. It is working in South Africa, the continent's only country growing GM crops at commercial level.

In Soweto I met a group of women growing Bt maize. Their field trials were educative. One of them, Ella Baloyi, was speaking reasonable Chichewa. "Amuna anga anali a ku Malawi [My husband was from Malawi]," she said. "Look up for him [name withheld] in Lilongwe. He left three years ago." She talked of how Bt maize is helping them, commercially. She belongs to a club that planted Bt maize on one plot and non-Bt maize on another. Both were mature and dry. But there was difference. Bt maize cobs were big and healthy, not attacked by insects while non-Bt maize cobs were small and partly suffering from weevils and such other insects. This means more maize has been harvested from a Bt crop than non-Bt crop from two identical plots. And the differences are remarkable, huge that one wouldn't go for non-Bt maize once they try Bt crop.

But it is at Makhathini in Kwazulu/Natal where the power of Bt crops manifests itself. The place is hot, like Malawi's lakeshore, typical of cotton growing areas. Farmers here have been growing cotton for years. But once they tried Bt cotton, they vowed never to look back to non-Bt cotton.

"I don't think I will ever grow non Bt cotton," said Rejoice Mkhabela, a farmer at Makhathini where a club of farmers is growing cotton. "With non-Bt cotton we used to spray every week for three

months, now we spray four times." This is possible because Bt cotton is a combination of genes that, among other things, make grow leaves that scare insects. So is maize. Biotechnology is able to produce insect and drought resistant yet nutritious maize.

"Food biotechnology is a way to improve food, crops and animals by selectively giving plants and animals new qualities, such as more vitamins and minerals and better nutritional value. Traditional breeding methods combine thousands of traits from two plants while with biotechnology, only the desired characteristic is added to a plant. This means food may be enhanced to contain additional nutrients or other traits to make them taste fresh. Farmers also benefit by having new ways to fight pests and disease and grow food in a more environmentally friendly way.

Bt farming is working in South Africa. President Thabo Mbeki has got biotechnology right. He says his government will increase funding for agricultural research to promote the continuous improvement in competitiveness and leadership in biotechnology that is vital to South Africa's agriculture. This fired up the fact finding mission. Journalists and MPs realized "we were cheated that GM foods are bad when in true sense they are meant to end hunger in our countries".

Malawi, too, was ready. Former Deputy Minister of Agriculture Henry Mumba said so. The country has a Biosafety Act to ensure safety imported of Bt foods. Our immediate enemy is not the Israel-Hizbollah war in Lebanon but hunger, disease and envy as the national anthem rightly suggests.

One African, Cryrus Ndiritu, has understood Mbeki correctly. "It is not multinationals that have a stranglehold on Africa. It is hunger, poverty and deprivation. And if Africa is going to get out of that, it has got to embrace GM technology," says Ndiritu. Malawi needs to listen to this call.

SOUTH AFRICAN RADIO POLL SHOWS SUPPORT FOR GM FOOD

<http://www.5fm.co.za/webpoll/poll.aspx>

In an open poll conducted by South African radio station 5 fm on 15 August 2006, listeners were asked to give their reaction on whether they would eat GM food. In response 50% of listeners answered "Yes", 36% "No" and 13% "maybe sometime in the future."

The radio station appears to be reacting to the information provided by Michael Hansen from the Consumer Union in the US who has been brought into South Africa by anti-GM activists to once again question the South African governments approach to GM regulation and labeling. The call for labeling of GM food by Mr. Hansen is questioned by biotechnology stakeholders who point out that:

- there is no justification for the special labeling of genetically modified foods, as a class, and that voluntary labeling is meaningless unless it is accompanied by focused consumer education.
- a system of mandatory labeling of biotech products would confuse consumers by inaccurately suggesting that these products are inherently different or pose safety concerns when compared with traditional foods.
- there is no reason to consider officially approved bioengineered foods to be any different from other foods in any meaningful or uniform way or that they present a greater safety concern than foods developed using traditional methods.
- food labeling would be appropriate if a food posed a potential health or safety risk or when there has been a material change in the food so that it was no longer substantially equivalent to its traditional counterpart.
- in the USA this policy has been supported by scientific groups such as the American Medical Association, American Council on Science and Health, Council for Agricultural Science and Technology and Institute of Food Technologists. Furthermore, a 2002 survey conducted by the International Food Information Council found that once this policy had been explained to respondents more that 59% agreed with it. In 2002 a ballot held in the State of Oregon to mandate the special labeling of biotech foods was rejected by 72% of voters, despite a huge effort by biotech opponents. This confirms that when consumers are presented with the facts about biotechnology and food labeling issues, they agree with the existing labeling criteria.
- In South Africa there are very strict laws governing the testing and approval of GM crops. The government only grants permission for GM crops to be grown and marketed when it is satisfied that they are safe, not just for humans and animals but for the environment too. For each GM product this approval process is thorough and takes several years to complete.

With regard to labelling, the Department of Health currently requires all GM products be labelled if their composition, preparation, storage or processing is different from the conventional counterpart.

In considering the labelling of GM food the following questions need to be addressed:

1. What will it cost to label all GM products? For example, apart from the actual labelling, the bioengineered and traditionally bred foods would have to be segregated, or identity preserved, throughout the entire distribution system. Consumers would therefore be forced to pay higher prices simply to cover the cost of getting foods labeled "GM".
2. How effective will the labelling be? Many surveys have shown that most South Africans seldom read labels.
3. What and when will we label? How much GM material must be in a product before it warrants a label and who is going to do the analyses? Do we label every maize cob, cotton boll or soybean pod? How do we label GM products sold in informal settlements and urban areas where most produce is sold in make-shift stalls and on pavements. In many South African retail stores most fresh produce is sold loose.
4. Who is going to monitor all GM products to ensure that such labelling is applied correctly and who is going to pay for this monitoring service?

NEWS FROM OTHER COUNTRIES

IMPROVED MAIZE AND WHEAT VARIETIES LOWER FARMERS' RISKS

<http://www.cimmyt.org/english/wps/news/2006/jul/steadyasShedges.htm>.

Modern maize and wheat varieties not only increase maximum yields in developing countries but add to farmers' incomes by assuring more reliable yields than traditional varieties. "By reducing the fluctuations in maize and wheat grain yields, scientists have played a vital role in making modern crop technology attractive, accessible, and beneficial to farmers and consumers around the globe," says Douglas Gollin, an associate professor of economics in Williams College, Massachusetts, USA.

Gollin analyzed changes in national-level yield stability for wheat and maize across developing countries and related them directly to the diffusion of modern varieties. His study shows that "over the past 40 years, there has actually been a decline in the relative variability of grain yields." This finding, says Gollin, disproves critics' views that farmers are exposed to greater risks due to the variability in yield of modern varieties.

EVOGENE, BIOGEMMA UNITE FOR DROUGHT-TOLERANT MAIZE

<http://www.evogene.com> or <http://www.biogemma.com>

Evogene and Biogemma, two biotech companies engaged in crop improvement, have recently announced that they will collaborate on developing commercial maize lines with improved drought tolerance. Both companies have already made progress toward the goal. Evogene's abiotic stress tolerance program has identified a set of novel genes that provide high tolerance to adverse environmental conditions in a number of model crops. Biogemma, on the other hand, has developed different genomic approaches to define what will be the best commercial variety.

DANFORTH TO LEAD CASSAVA SEQUENCING PROJECT

<http://www.danforthcenter.org/newsmedia/NewsDetail.asp?nid=122>

The U.S. Department of Energy Joint Genome Institute (DOE JGI) has announced that it has selected a cassava genome sequencing project proposal organized by the Donald Danforth Plant Science Center. Heading the project is Dr. Claude M. Fauquet, Principal Investigator from the Center, who oversees a consortium comprised of over a dozen scientists from 11 institutions that submitted the proposal to the DOE JGI.

"Sequencing the cassava genome will help bring this important crop to the forefront of modern science and generate new possibilities for agronomic and nutritional improvement," said Dr. Norman Borlaug, Nobel laureate, father of the "Green Revolution," and Distinguished Professor of

International Agriculture, Texas A&M University. "It is a most welcome development, especially for millions of the world's poor who depend upon cassava for their sustenance."

Cassava can grow in a wide variety of environments, and is a staple crop and an important source of starch for about 1 billion people around the world. It also costs less to produce per hectare, making it an attractive and strategic source of renewable energy.

BIOFUELS TAKE CENTER STAGE

<http://www.nature.com/nbt/journal/v24/n7/full/nbt0706-725.html>.

<http://www.nature.com/nbt/journal/v24/n7/full/nbt0706-777.html>.

Various articles and an editorial in the Nature Biotechnology journal tackle the issue of biofuels head on. From substitutes for bioethanol, to the biofuels scene in Europe, both research and debates are heating up to meet the challenge of supplying fuel needs throughout the world.

Dependency on fossil fuels is not only depleting fuel stores, but also has detrimental effects on the environment, and biofuels seem to be the answer to both problems. Bioethanol, however, is in need of a biotechnology boost, says the Nature Biotechnology editorial; although bioethanol is promising, its production has moved the US away from natural gas to coal in running biofuel refineries. The main source of bioethanol, maize, also requires large amounts of fertilizer and pesticide to cultivate, leading to runoffs in fields that bleed into and contaminate groundwater.

Biotechnology, according to the editorial, could solve these problems by engineering crops that have greater carbon-fixing efficiency, or that require little or no fertilizer or pesticide. The editorial also speculates that biotech innovations "will be central in transitioning bioethanol production from corn grain to more sustainable, energy-efficient, but recalcitrant feedstocks, such as cellulosic biomass," which includes wood chips and switchgrass.

In a similarly themed feature, "Can Biofuels Take Center Stage?" research into lignocellulose, another biofuel feedstock, is brought to the fore. Lignocellulose is the world's most abundant biological material, comprising the woody parts of plants that can be found in wheat straw, corn husks, or discarded rice hulls. Research is now underway in both the Americas and Europe to derive the most energy from this potentially rich source: scientists at Dartmouth College, New Hampshire have engineered microbes to produce ethanol of cellulose, although at low yields; other researchers are hopeful that bacteria that convert biomass into hydrogen, and algae that yield biodiesel will soon be available.

BIOFUELS COST, BENEFITS EXAMINED

<http://www.pnas.org/cgi/content/full/103/30/11206>.

With rising costs and depleting supplies of fuel, as well as the negative environmental consequences associated with the use of fossil fuels, scientists are studying the viability of biofuels, which are sourced from agricultural products. Two main types of biofuels are currently in use: bioethanol, sourced mainly from maize and sugarcane; and biodiesel, sourced mainly from soybean and oilseed rape.

To be viable alternatives, biofuels should provide a high net energy gain, have high environmental benefits, be economically competitive, and be producible in large quantities without reducing food supplies. In line with this, Jason Hill and colleagues of St. Olaf College, Minnesota, USA, examine the "Environmental, economic, and energetic costs and benefits of biodiesel and ethanol biofuels." Their work appears in the latest issue of the Proceedings of the National Academy of Sciences.

By using current data on farm yields, commodity and fuel prices, farm energy and agricultural inputs, production plant efficiencies, co-product production, greenhouse gas (GHG) emissions, and other environmental effects brought about by the use of maize grain ethanol and soybean biodiesel, researchers concluded that biodiesel is the more viable fuel alternative, at least in the US. In particular, they found that:

- 1) Bioethanol yields 25% more energy than the energy invested in its production, whereas biodiesel yields 93% more;

- 2) GHG emissions are reduced 12% by the production and combustion of ethanol and 41% by biodiesel;
- 3) Biodiesel releases less air pollutants per net energy gain than ethanol;
- 4) Biodiesel has minimal impact on human and environmental health through nitrogen, phosphorous, and pesticide release; and
- 5) Transportation biofuels such as synfuel hydrocarbons or cellulosic ethanol, if produced from low-input biomass grown on agriculturally marginal land or from waste biomass, could provide much greater supplies and environmental benefits than food-based biofuels.

RESEARCH TRACKS AGBIOTECH PROGRESS FOR DEVELOPING COUNTRY FARMERS

<http://www.agbioforum.org/v9n1/v9n1a03-spielman.htm>.

Researchers promote agricultural biotechnology as a partial solution to reducing poverty and promoting the growth of the agricultural sector in developing countries. The path from the laboratory to the field, however, is filled with obstacles that have to be overcome in order for the potential of genetically modified (GM) crops to be fully realized by resource-poor, small-scale farmers in the developing world. David J. Spielman and colleagues of the International Food Policy Research Institute (IFPRI) explore these problems in "Will Agbiotech Applications Reach Marginalized Farmers? Evidence from Developing Countries." Their work appears in the latest issue of the online journal AgBioView.

Researchers conducted two studies, one in 2002, and the other in 2003-2004. Both studies surveyed experts and stakeholders on the state of biotech crop research in different countries and research organizations, and examined partnerships between private firms and the international research centers of the Consultative Group on International Agricultural Research (CGIAR).

The two studies found that agricultural biotechnology in developing countries is caught up in the early stages of research and cannot move potential products forward into greenhouse or field trial testing stages due to:

- 1) regulatory environments that are bureaucratic and slow;
- 2) poor country-country information sharing in the later stages of product development; and
- 3) poor links between research organizations involved in agricultural biotechnology research and private firms that lead the industry.

In order to move forward, the paper recommends that linking and communication be enhanced amongst sectors by:

- 1) enhancing the quantity and quality of information on safety studies of biotech crops through better information sharing among countries and researchers;
- 2) organizing greater dialogue between industry and public research, and countries; and
- 3) establishing competitive research grants and research awards.

SCHEME TO PROMOTE SUSTAINABLE AGRICULTURE IN DEVELOPING COUNTRIES

<http://www.bbsrc.ac.uk/funding/news/welcome.html>

The Biotechnology and Biological Sciences Research Council (BBSRC) and the Department for International Development (DFID) have announced a new scheme to promote biotechnology and biological sciences research that addresses the challenges of agriculture in developing countries. This scheme will strengthen collaboration between both agencies to support research that will address problems in agricultural productivity and food security, and how these can be solved in Africa and Asia.

This scheme is one of the new initiatives being implemented under DFID's Strategy for Research on Sustainable Agriculture, and has a total budget of £6 million that will cover research grants in the next four years. The scheme's first research call will focus on crop sciences.

THE TRUTH ABOUT:

http://www.croplife.org/website/pages/Truth_about_Bt_crops.aspx

1. Bt COTTON AND PEST PRESSURES IN CHINA

http://www.croplife.org/website/pages/Truth_about_Bt_crops.aspx

A recent report from U.S. researchers at Cornell University claims that biotech cotton grown by Chinese farmers triggered an increase in secondary pests that ultimately cut profits. However, one of the main researchers providing data for the study says these findings are based on "incorrect interpretation of the data and can be misleading."

In fact, published reports for China indicate that from 1999 to 2001, biotech cotton yields averaged 24 percent higher than those for non-biotech cotton. Farmers benefited from reduced production costs primarily due to fewer but more effective pesticide applications, and more efficient farm labour. Published studies have documented a 67% reduction in pesticide applications. Chinese farmers continue to demand Bt cotton because of the benefits it brings - since these crops were first planted there in 1997, the Bt cotton plantation area has increased rapidly, reaching 3.3 million hectares in 2005. This accounts for nearly 60% of China's overall cotton crop area.

According to Huang Jikun, director of the Centre for Chinese Agricultural Policy, which provided data for the study, the Cornell team underestimated the benefits of GM cotton by comparing income differences between Bt and non-Bt farmers in 2004. This year had particularly low temperatures plus higher precipitation, which led to the secondary pest outbreak - not only in Bt cotton, but also in other conventional crops nearby. He also commented that after nearly ten years of experience with Bt cotton, the pest population on both biotech and non-biotech cotton farms had dramatically reduced, with a corresponding decrease in the amount and cost of pesticides used.

Of course, it is always important for farmers to study and develop strategies against insects not affected by Bt crops - this is basic for any integrated pest management (IPM) programme. With Bt crops, a key element of resistance management can be the creation of a 'refuge' - an area or strip of land planted with non-Bt crop varieties that reduces the environmental pressures encouraging insects to develop resistance to Bt. Other important strategies farmers use to control pests include:

- Growing crops that are appropriate to local climate, soil and topography
- Rotating crops to limit the build-up of pests and reduce weed problems
- Not planting crops that can host similar pests next to each other
- Using efficient irrigation methods
- Reducing pest pressures in individual crops by inter-cropping
- Adding soil nutrients to maintain soil fertility and plant health.

In each instance, various factors must be taken into account when deciding which crop protection method or combination of methods should be used. These include cost, benefits, timing, available labour, machines/tools and control agents, as well as economic, environmental and social factors.

Biotech crops - as with all crops - require routine inspections and observation. This is needed to assess how well plants are growing, and what actions must be taken on cultivation, fertilizer use, and the control of weeds, insects, other pests and disease - as well as when to harvest.

For more information see SciDev.net article on Cornell study.

2. Bt COTTON AND FARMER SUICIDES IN INDIA

In India, many anti-biotech activists are blaming Bt cotton for many of the problems gripping cotton farmers, including farmers' suicide. This is equivalent to blaming the Green Revolution for starvation deaths reported in some parts of the country.

Yes, cotton is a very risky crop. If there is a mismatch between the agronomic conditions and variety, then independent of whether they are Bt or not, crops may fail. Moreover, Bt varieties are as susceptible to all the variables in cotton cultivation that non-Bt varieties are - climate, pests, soil conditions, rainfall -- including human factors such as farmers' familiarity

with cotton in general and the variety in particular, spurious seeds, adulterated pesticides, delays in input arrival, and credit shortages. Any and all can cause disaster.

In fact, Bt cotton - which made its debut five years after farmers' suicides were first reported - has resulted in quantum jump in cotton production and productivity. Reports by the Cotton Advisory Board (CAB) of the Government of India show that productivity has reached 460kg of lint per hectare in just three years since Bt Cotton was first introduced - exceeding the target of 320kg by 2007 by over 140%. In addition, the National Commission on Farmers has concluded that cultivation of Bt cotton allows for an additional net profit of at least Rs. 12,000 per ha and about 40-50 % savings in pesticide use. Sales of Bt cotton seeds continue to increase, and farmers are using saved, traded and locally-crossed illegal varieties of Bt cotton in ever-increasing numbers and acres. The fact that a million farmers have elected to plant Bt cotton over 1.3 million hectares in 2005 shows the significance of these crops Indian agriculture.

It is clear that technological advancement is a solution to and not a cause of this important issue in India.

For more information see Understanding the Bt Cotton maze published in India Together.

NOTICEBOARD

- 5 – 7 September 2006** - The first International Conference on Sustainable Irrigation Management, Technologies and Policies will be held in Bologna, Italy. This conference seeks to address the different aspects of irrigation, including not only the management of water resources and scientific and technical aspects, but also matters related to policy and economics. Its objective is also to discuss how to reach the sustainable management of irrigation resources in the future by applying modern simulation methods, advanced and new technologies as well as analyzing different policies and economic forecasting techniques. For more information, visit <http://www.wessex.ac.uk/conferences/2006/irrigation06/>.
- 5 – 6 October 2006.** A workshop entitled "Latest Developments and Trends in Agricultural Biotechnology" will be held on Thursday 5th and Friday 6th October 2006 at the Centurion Lake Hotel, Pretoria. This workshop has been specifically orientated to the commercial and industrial sectors and will cover topics as such *The Domestic Situation, The Global Situation, New Trends, Acceptance of Biotechnology Products by Consumers and Addressing Common Biotechnology Concerns*. The workshop registration fees are R100 per person for AfricaBio members and R500 per person for non-AfricaBio members. The registration fee covers Conference packs, teas and lunches. For more information, please contact Remi at AfricaBio; remi@africabio.com
- 9 – 13 October 2006** - The International Rice Congress (IRC) will bring together all aspects of the rice industry with a special focus on the latest research, science, and technology. Hosted by the Indian Ministry of Agriculture, and co-sponsored by the Indian Council for Agricultural Research (ICAR) and the International Rice Research Institute (IRRI), it will be held in Delhi and includes three main events: The 26th International Rice Research Conference, the 2nd International Rice Commerce Conference, and the 2nd International Rice Technology and Cultural Exhibition. For more information, visit <http://www.icar.org.in/irc2006>.
- 9 – 10 November 2006** - Bangalore, India will host the 7th Agricultural Ontology Service (AOS) Workshop on Ontology-based knowledge discovery: Using metadata and ontologies for improving access to agricultural information, the workshop will provide a platform for implementers to demonstrate how ontologies can extract and acquire additional knowledge from existing agricultural information systems. It aims to bring together research communities, with special focus on agriculture, whose members are interested in efficiently capturing knowledge and in creating representations and formalizations that can be useful for reasoning and knowledge discovery. For more information, visit: http://www.fao.org/aims/pub_aos7.jsp
- 9 – 11 November 2006** - The Department of Agricultural Research and Education (DARE) and the Indian Council of Agricultural Research (ICAR) will host the GFAR 2006 "Reorienting

Agricultural Research to meet the Millennium Development Goals" from November 9-11, 2006 in New Delhi, India. About 400 participants representing national agricultural research systems, advanced agricultural research institutes and universities, the Consultative Group on International Agricultural Research (CGIAR), non-government organizations, farmers' organizations, and the private sector are expected to attend the conference.

For more information, visit <http://www.egfar.org/gfar2006/index.jsp>

20 – 23 November 2006 - The Innovation Africa Symposium will take place in Kampala, Uganda. It will convene a group of internationally recognized experts on innovation systems to share their latest thinking with agricultural researchers and development partners. The Symposium will also provide an opportunity for participants to share their achievements in enhancing innovation processes. Within the broader framework of agricultural research and development, the main topics to be addressed in the Symposium will include: conceptual and methodological developments in agricultural innovation systems; enhancing local innovation processes; and building capacity for integrating innovation systems approaches into agricultural research and development. For more information, send an email to s.kaaria@cgiar.org or p.anandajayasekeram@cgiar.org.

28 January – 1 February 2007 - The Asia Pacific Conference on Plant Tissue Culture and Agribiotechnology 2007 will be held in Malaysia under the auspices of the Asia Pacific Association of Plant Tissue Culture and Agribiotechnology and the Academy of Sciences Malaysia. The conference aims to promote research in all aspects of basic and applied biotechnology, especially in the areas of plant tissue culture and agricultural biotechnology. Aside from invited lectures and scientific sessions, other highlights of the Conference will be an Orchid Symposium, a Business Forum, and a Trade Exhibition. Deadline for abstracts is October 31, 2006. For more information, visit the conference website at <http://www.aimst.edu.my/apacpa2007>.

23 – 27 March 2007 - The 2nd International Conference on Plant Molecular Breeding (ICPMB) will be held in Sanya City, Hainan province, P. R. China. This event will focus on applied plant genomics and molecular plant breeding, in view of the increasing need to use new molecular approaches and mine novel gene resources. Important aspects of plant molecular breeding and related transgenic ecological risk and intellectual property rights (IPR) will be covered in several sessions and satellite workshops. Deadline of full paper and extended abstract submission is on December 31, 2006.

24 – 28 September 2007 - A workshop on "Biosafety of GM Crops and the Evolution of Regulatory Frameworks: Issues and Challenges" will be held in Belo Horizonte, Minas Gerais, Brazil. Download the registration form from http://www.anbio.org.br/eventos/icg_form.doc. Send completed forms to secretaria@anbio.org.br or l.oda@uol.com.br. For more information, visit <http://www.funed.mg.gov.br>.

NOMINATIONS OPEN FOR SCIENCE COMMUNICATION AWARDS

The Biosciences Federation Science Communication Award recognizes research-active bioscientists from UK universities and institutes who make an outstanding and consistent contribution to communicating science to the public. Nominations for this award must be made by an individual from a Biosciences Federation Member or Associate Member Organization by submission of a completed Nomination Form. The deadline for receipt of nominations is 14th September 2006. For more information and nomination forms see http://www.bsf.ac.uk/awards/sci_comm2006.htm.