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CONTENTS:

- ◆ **African Nobel Laureate supports biotech capacity building (1)**
- ◆ **Plant biotech progress in Africa (2)**
- ◆ **EU approves NK603 maize for food (3)**
- ◆ **Economic benefits of GM rice (4)**
- ◆ **Uganda publishes Biosafety Bill (5)**
- ◆ **Digestion study on pigs show GM maize to be safe (6)**
- ◆ **Implications of GM technology for Sub-Saharan Africa (7)**
- ◆ **Significant health benefits demonstrated for Bt maize (8)**
- ◆ **GM products on the market are safe (9)**
- ◆ **GM corn fields can 'co-exist' with non-GM crops (10)**
- ◆ **Third EU GM food approval on the way? (11)**
- ◆ **Co-existence (12)**
- ◆ **Meetings/Exhibitions (13)**

African Nobel Laureate supports biotech capacity building

<http://www.isaaa.org/africenter>

The 2004 Nobel Peace Laureate Wangari Maathai has called for biotechnology capacity building in Kenya and other developing countries to enable safe adoption of the technology. Maathai, who is also Kenya's assistant minister for environment and natural resources, won the coveted prize for her long standing crusade against environmental destruction in Africa.

During a live national television talk show in Kenya, the Nobel Peace Laureate said that agricultural biotechnology is here to stay and the best "we could do is to train the people involved to be able to minimize any inherent risk." She gave the example of Kenya where President Mwai Kibaki supported the use of biotechnology to boost food production in the country while commissioning a modern biosafety greenhouse for Bt maize trials being conducted by the Kenya Agricultural Research Institute and the International Maize and Wheat Improvement Centre (CIMMYT).

Kenya is in the process of enacting biosafety laws and policy that is expected to open up the country for commercialisation of transgenic crops like cotton and maize. The environmentalist's support for agricultural biotechnology comes amidst realization that conventional technology alone can no longer meet food production demands, and that agricultural biotechnology is increasingly becoming an important component of global food security strategies.

Plant biotech progress in Africa

<http://www.agbioforum.org/v7n12/v7n12a02-thomson.htm>.

In a report published online by Agbioforum on The Status of Plant Biotechnology in Africa, Prof. Jennifer Thomson of the University of Cape Town reviews the progress made so far by South Africa, Egypt, and Kenya in the field of plant biotechnology.

Thomson tracks the progress of various projects underway in Africa, including the University of Cape Town's maize streak virus (MSV) – resistant maize, drought-tolerant maize, and vaccine production in tobacco; The South African Sugar Experiment Station's herbicide-resistant sugarcane; The Council for Scientific and Industrial Research's fungi-resistant maize and millet; Cairo's Agricultural Genetic Engineering Research Institute's insect-resistant Egyptian cotton; and Kenya's Agricultural Research virus-resistant sweet potatoes. Thomson looks at current setbacks as well as GM crops move slowly from the experimental to the commercial stage, while meeting regulatory requirements on the way.

So far, Thomson reports, the biotech crops under study show promise. The sugarcane resistant to the herbicide glufosinate ammonium showed phenotypic stability in field trials. Field trials are pending for AGERI's insect-resistant long-staple GM cotton strain, developed by crossing Egyptian elite germplasm with Monsanto's Bollgard II. Other GM crops that have been in field trials for more than one season include potato tuber moth-resistant potatoes, virus-resistant squash and tomatoes, stem borer-resistant maize, and drought-tolerant wheat.

More crops are in the field trial stage, and some companies have expressed interest in their commercialisation.

Agbioforum recently released a special issue of its online magazine, this time focusing on Progress, Achievements, and Constraints for Plant Biotechnology in Developing Countries. With guest editors Nigel Taylor, Lawrence Kent, and Claude Fauquet of the Donald Danforth Plant Science Center, St. Louis, Missouri, U.S.A., the special edition contains more articles that discuss the experiences of various organizations and agencies in introducing biotechnology to the developing world.

EU approves NK603 maize for food

http://www.efsa.eu.int/pdf/pressrel_gmo_0203_final_en.pdf

The European Union (EU) has finally approved the NK603 maize line for food use, after safety assessments that took into account its potential environmental impact; compositional, safety, and agronomic characteristics; potential allergenicity; and nutritional content. In the end, a panel convened by the Union found that NK603 "is as safe as conventional maize and...its placing on the market – for import for processing and food or feed use—is unlikely to have an adverse effect on human or animal health, or in this context, on the environment."

NK603 maize is genetically modified to make it tolerant to glyphosate, the active ingredient in commonly used herbicides. This allows farmers to still use herbicides to keep weeds away without damaging their maize crop. It has already been approved for import in Australia, Colombia, Korea, Japan, Mexico, the Philippines, Russia, and Taiwan, and has received authorization for cultivation in Argentina, Bulgaria, Canada, Japan, South Africa, and the USA.

Economic benefits of GM rice

http://econ.worldbank.org/files/38016_wps3380.pdf.

Welfare gains stand to be more significant than farm productivity gains as a result of the potential health-enhancing attributes of golden rice. This was the conclusion of Kym Anderson and colleagues in a World Bank Policy Research Working Paper entitled "Genetically Modified Rice Adoption: Implications for Welfare and Poverty Alleviation."

Substantial welfare gains are expected even assuming that golden rice has no positive effect on farm productivity. There is also no valuation of the non-pecuniary welfare gain of Vitamin A deficient persons from being able to reduce that vitamin deficiency through access to golden rice. The authors who were from the University of Adelaide, Australia and the Danish Research Institute of Food Economics in Copenhagen at the time of the study, added that if developing countries

particularly Sub-Saharan Africa would adopt golden rice, the welfare gains and alleviation of poverty and ill-health would be even greater. The gains would even be more significant if golden rice adoption encouraged the adoption of other GM rice and other crop varieties.

Uganda publishes Biosafety Bill

<http://www.africabiotech.com/news2/article.php?uid=115>

Uganda's State Minister for Agriculture, Dr. Kibirige Sebunnya, has now paved the way for a new GM policy through the publication of Uganda's first Biosafety Policy Bill. The enactment of the Bill into law is likely to pave way for new GM projects, including Bt cotton, disease-tolerant banana, improved virus-tolerant potatoes, and insect-tolerant sorghum varieties.

National Agricultural Research Organization (NARO) director-general George Otim-Nape Otim-Nape clarified that, "Uganda will continue to build capacity to understand, assess, evaluate, and manage potential risks and benefits of biotechnology"

Digestion study on pigs show GM maize to be safe

<http://www.thesouthern.com/rednews/2004/11/07/build/business/BIZ005.html>

A study by a team from the College of Agricultural Sciences of the Southern Illinois University in Carbondale (SIUC) have recently found that no traces of a "foreign" gene wound up in the flesh or blood of 56 piglets fed GM maize.

Under the leadership of Gary A. Apgar, the team fed GM maize to weanling pigs. Younger pigs are more efficient at turning a pound of feed into a pound of gain, hence increasing the potential for the transgene to be absorbed.

When they looked for evidence of the gene in the pigs' stomach contents and faeces, they found nothing. They, however, detected fragments of transgene in the stomach contents of 50 of the piglets, and found fragments in only one of the samples screened from the small intestine. This suggests further that the additional gene generally does not survive the digestive process.

This new study reinforces findings from an earlier work, also by the SIUC, where larger, older pigs were used as model organisms, and where no remnants of the transgene were found in samples of contents from the small intestine and faeces.

Implications of GM technology for Sub-Saharan Africa

http://econ.worldbank.org/files/38750_wps3411.pdf

The economic gains from using GM crop technology in Sub-Saharan Africa (SSA) are potentially large, say Kym Anderson and Lee Ann Jackson in a working paper released by the World Bank Group. The gains are felt most from using nutritionally enhanced GM wheat while the estimated benefits are diminished slightly by European Union's current barriers to GM foods.

The authors used the global economy-wide computable general equilibrium model known as GTAP. They specifically noted that if SSA countries impose bans on GM crop imports in deference to EU market demand for non-GM products, the domestic consumer loss net of that protectionism boost to SSA farmers would be more than the small gain derived from greater market access to the EU.

Anderson and Jackson conclude that African countries need to assess whether they share the food safety and environmental concerns of Europeans regarding GM organisms. Otherwise, they have much to gain from adopting GM crop varieties especially second generation ones.

Significant health benefits demonstrated for Bt maize

"Bt Corn Can Reduce Serious Birth Defects by Limiting Toxic Mold" Western Farm Press, Nov 6 2004

In the early 1990s, Hispanic women in southern Texas gave birth to babies with devastating neural tube defects (NTDs) at a rate six times greater than non-Hispanic women in the U. S. The cause for this was a mystery – until researchers identified several key connections. The affected women ate a diet high in unprocessed maize.

Studies from other countries, as well as the U. S., have found a link between such diets and NTDs. Only recently has research identified fumonisin, a mycotoxin found in unprocessed maize as the likely cause. Fumonisin is a toxic chemical, previously identified as highly carcinogenic, produced by moulds and fungi. When maize is damaged by insects, the *Fusarium* mould can grow at the site of the damage, and produce fumonisin. In addition to its toxicity, fumonisin interferes with the ability of the body to utilize folic acid. Folic acid in the diet is known to reduce the incidence of NTDs.

Researchers in Argentina, France, Italy, Spain, Turkey and the United States have demonstrated that genetically engineered Bt maize, modified to resist insects, reduces the amount of fumonisin. Test results have shown that Bt maize has drastically lower levels of fumonisin, up to one-tenth to one-twentieth the amount of fumonisin in conventional or organic maize varieties. (By comparison, tests on six varieties of organic cornmeal products, conducted by the UK Food Safety Agency in September 2003, found levels of fumonisin nine to 40 times recommended levels for human health. All six were voluntarily withdrawn from grocery stores.)

The fumonisin link to birth defects identifies health benefits derived from growing genetically modified maize. These are in addition to benefits identified in other studies, including reduced labour costs for farmers, increased yields and reduced pesticide usage. Despite scare tactics from biotech opponents, these crops have passed rigorous safety tests in the U. S. by the Environmental Protection Agency, Food and Drug Administration and the Department of Agriculture.

GM products on the market are safe

www.cedab.it

The first ever consensus document on “Food Safety and GMOs,” signed by 18 respected Italian associations was launched recently in Milan on the initiative of the Società Italiana di Tossicologia (SITOX). According to the associations, which represents over 10,000 researchers: Ever since man turned from hunter-gatherer into breeder and farmer, he has tamed animals and plants and altered—sometimes knowingly—their genetic makeup. As such, most of the crops currently farmed and animals raised in our world are in fact genetically modified organisms (GMOs). GMOs are governed by rules that are unparalleled elsewhere in the food industry, so they are more strictly controlled than any other food product. What’s more, they must undergo the full range of food safety tests before they are authorized for sale.

It would be wise to concentrate research not on the technology used to produce these crops, but on their engineered genetic features on a case-by-case basis.

The GMOs now on the market have passed all tests and have been properly authorized, so on the basis of current knowledge, they should be considered safe for both human and animal consumption.

Therefore, the dualistic stance on GM food (i.e. one is either “pro” or “anti”) should be abandoned in favour of rational consensus based on knowledge of the process and its products.

“Recombinant DNA technology is the basis of advanced biotechnologies, i.e. processes that use living organisms or parts of them to obtain goods and services with a view to improving the lives of humans,” said Giorgio Cantelli Forti, president of the Società Italiana di Tossicologia.

“It allows us to produce new medicines, diagnostic and treatment tools, industrial and food products, animal breeds, varieties of produce and forms of energy, faster and more cheaply than ever before. However, while public opinion is quick to accept the innovations and hope that biotechnology brings to the field of health, it is highly resistant when these same innovations are used in farming and food. This attitude stems from doubts and fears fueled by a lack of well-balanced information. It is the obligation of the scientific community—namely, researchers who have the means to do so—to shift the debate over genetically modified organisms to a more balanced, scientific plane.”

The consensus was drafted after thorough evaluation of the international literature on the subject and of the opinions of the various Learned Societies and international organizations. It addresses several topics, including the relationship between GMOs and nature, safety evaluation procedures, the principle of substantial equivalence, toxicity analysis, allergenicity, gene transfer, antibiotic resistance, long-term effects, and animal feed. The meeting that generated the consensus was held in Bologna on May 5, 2004 at the invitation of the Società Italiana di Tossicologia. It was organized

as a research conference to follow up on the honorary degree in pharmaceutical biotechnology granted to Kary B. Mullis, winner of the 1993 Nobel Prize in Chemistry, by the Pharmaceuticals Faculty of Alma Mater Studiorum (University of Bologna).

GM corn fields can 'co-exist' with non-GM crops

<http://www.biomedcentral.com/news/20041124/04>

The organizers of a research project in which German fields were planted with GM maize reported that the test results prove that GM maize fields can "co-exist" with neighbouring non-GM fields.

The announcement was made at a Berlin press conference just days before Germany's Bundestag, or lower house of Parliament, is expected to give final approval to a new law that would strictly regulate GM crops. Opponents of the law say it will stifle innovation and most likely trigger an exodus of GM research from Germany.

The tests, in 28 GM maize fields surrounded by non-GM fields in seven states, have been the subject of controversy in Germany, whose environmentally friendly Greens Party is a junior coalition partner of Chancellor Gerhard Schroeder's ruling SPD party. Test field locations were kept secret to prevent their destruction by anti-GM crop activists.

Speaking after the press conference, W. Eberhard Weber, leader of the research team, said his study, which measured GM contamination in maize harvested from surrounding non GM fields, shows that non-GM maize planted at least 20 meters from GM maize was not contaminated above the EU-allowed limit of 0.9%. According to EU regulations, maize with a GM level above 0.9% cannot be labelled as non-GM.

"There is no doubt that if you keep a certain distance, then co-existence between GM and non GM fields is possible," said Weber, who is head of the Department of Plant Breeding and Plant Protection at Martin-Luther-University at Halle-Wittenberg. "And that 'certain distance' not less than 20 meters."

Christoph Then, a member of Greenpeace Germany, who heard Weber speak at the press conference said that the study results appeared to be accurate, "but the conclusion that you have no problem if you put non GM crops 20 meters away from GM crops, this conclusion is wrong,"

Then insisted that the 0.9% contamination threshold mandated by the European Union was irrelevant, because many German maize processors and millers will not accept maize with GM contamination above 0.2% to 0.4%.

Weber defended his conclusion, saying the data are accurate and that it also was correct to use the European Union's benchmark for GM contamination. As for the issue of acceptable levels for the food industry, he said: "That is an issue that can be discussed in the future and a solution found."

Third EU GM food approval on the way?

Food Navigator.com (26.11.2004)

A third source of GM ingredients could soon be cleared by Europe as officials meet to discuss approval for the importation of MON 863 maize, modified to resist corn rootworm. If cleared, this will mark the third biotech foodstuff allowed for European consumption following the end of the *de facto* moratorium on new authorisations earlier this year.

Despite tough new European rules to track and label genetically modified organisms enforced in April, food makers are opting to skip GM ingredients in European food formulations because they know the suspicious European consumer will refuse to buy GM food products.

The meeting on Monday is a further attempt by the European Commission to push through approval for the MON 863, cleared earlier this year on risk assessment by the European Food Safety Authority (EFSA), but two months ago member states failed to agree to allow MON 863, a situation that may be repeated next week.

If this is the case, the Commission, and as is likely, could push it through under a facet of the law known as the 'comitology procedure' - when the council fails to reach a majority decision, the Commission itself can force the green light.

Facing the fury of anti-GM campaigners, in May this year the Commission used this legal capacity to approve a GM sweetcorn supplied by Swiss biotech firm Syngenta to enter the food chain - the first approval of a GM foodstuff since 1998 and marking the end of the *de facto* moratorium set up in 1998. MON810, a GM maize engineered to be resistant to the European corn borer, became the second approval since the ban when cleared within months of Syngenta's product.

Canada, Japan, the Philippines and the US have all cleared MON863 for use in food. In 2003 non-GM maize was grown commercially in over 150 countries and worldwide combined production hit 638 million metric tonnes harvested from 143 million hectares.

Co-existence

www.pgeconomics.co.uk or graham.brookes@pgeconomics.co.

Co-existence of GM and non GM maize crops can be successfully delivered by applying a few simple measures according to a report published today.

The report was published just as the European Commission failed to come to a decision on whether national bans on a number of authorized GMOs currently in place in five EU member states should be lifted, and as a number of member states have put forward their rules for co-existence.

According to one of the authors of the report, Graham Brookes, 'The evidence is clear cut and consistent – all you need for co-existence of GM and non GM maize is four buffer rows or several metres separation distance between crops. This contrasts with impractical and disproportionate maize coexistence rules being put forward in some member states'

The report reviewed the commercial experience of farmers who grow GM maize in Spain and summarized the findings of a number of co-existence research studies in Europe and other countries. The key findings were:

- GM-specific co-existence research in Spain and France shows that by applying good farming practices and normal harvesting practices alone (i.e. without the formal application of co-existence measures) the 99.1% purity threshold set by the 2004 EU labelling legislation can be achieved.
- By applying additional specific co-existence measures in isolation or in combination the probability of GM adventitious presence being found in a non GM maize crop (grown in close proximity) is reduced further.
- Experience from Spain shows that the application of four buffer rows of non GM maize between a GM crop (on the GM growing farm) and a non GM crop (on an adjacent farm in plots of under 1 hectare) as a single measure has delivered effective co-existence.
- A separation distance of 6 metres is also effective. Application of a greater separation distance (e.g. 10-12 metres identified in the French co-existence research) offers additional provision for worst case scenarios and reduces further the probability of GM adventitious presence occurring to minute levels.

NOTICEBOARD

3rd to 4th February 2005 - BIOTECH CHALLENGES TO BE EXPLORED IN 2005 FORUM -

Harnessing the benefits of biotechnology, as well as producing results, present a challenge to the Asian Scientific community. These challenges, as well as the political, economic, social, technological, environmental, and legal aspects of the biotechnology industry will be discussed in the Asia Biotech Forum, to be held at the JW Marriott in Kuala Lumpur, Malaysia.

Biotech professionals and those associated with the industry are invited to attend. For more information, contact <http://www.marcusevans.com/events/CFEventinfo.asp?EventID=9129>

5th to 7th **March 2005 - FAO WORKSHOP ON BIOTECH** - The Food and Agriculture Organization will hold a workshop on "The role of biotechnology for the characterization and conservation of crop, forestry, animal and fishery genetic resources" in Turin, Italy. Co-organized with the Fondazione per le Biotecnologie, the ECONOGENE project and the Società Italiana di Genetica Agraria, the workshop includes three sessions on the status of the world's agro-biodiversity; the use of biotechnology for conservation of genetic resources; and genetic characterisation of populations and its use in conservation decision-making. See http://www.fobiotech.org/FAO_2005.htm or contact mail@fobiotech.org for more information.

23rd to 26th September 2005 - THE 4th ALL AFRICA CONFERENCE ON ANIMAL AGRICULTURE - Venue: Arusha International Conference Centre, Arusha, Tanzania. Theme: The role of biotechnology in animal agriculture to address poverty in Africa: Opportunities and challenges. The theme of the conference, 'The role of biotechnology in animal agriculture to address poverty in Africa: opportunities and challenges' will be addressed in several sessions, the details of which are being developed. Examples Biotechnologies to address animal health; Biotechnologies to improve product quality and safety; Biotechnologies to improve understanding of the genetic diversity in indigenous livestock populations; Biotechnologies to conserve and improve indigenous livestock genetic resources; Biotechnologies to improve animal nutrition; Policies and institutional constraints to biotechnology research and applications; Institutional arrangements to facilitate biotechnological innovations in Africa. For more information contact: Rosalynn Murithi on r.murithi@cgiar.org

3rd to 7th October 2005 – THE 3RD WORLD CONGRESS ON CONSERVATION AGRICULTURE (IIIWCCA) - The theme of the Congress is "Linking Livelihood, Production and Conservation" and will take place in Africa, Nairobi, Kenya under the auspices of the African Conservation Tillage Network. The organisers have decided to dedicate this Congress to realising the Millennium Development Goals (MDG). Therefore, issues of food security, poverty alleviation and the underlining economic (rural) development within the context of environmental protection will be key features of the Congress. It is hoped that the Congress will help Africa to articulate the key issues and concerns with regard to the revitalised agriculture thrust and ensure agriculture support energies and resources are well directed into priority issues.

For more information contact actnetwork@africaonline.co.zw or visit the Congress webpage in <http://www.act.org.zw>.