

# BioLines

*Where Nature and Science Meet*

[biolines@africabio.com](mailto:biolines@africabio.com)

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**Editor: M. Koch**

# AfricaBio

Biotechnology Stakeholders Association

**Tel: 012 667 2689**

**Fax: 012 667 1920**

[www.africabio.com](http://www.africabio.com)

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## How EU moratorium affects Africa

A Harvest Biotech (Kenya), From AgBioView 20 Oct 03, <http://www.ahbfi.org/newspaper/firstquart9.htm> (shortened)

Most of Europe's concerns with GM foods have nothing to do with food safety. Yet, in many ways, the moratorium on GM food and crops, translates to a negative blow for Africa. Recently, Zambia cited trade relations with the EU as part of its reason for rejecting GM food. Politicians and economists said if the country's agricultural sector whose primary export market is the EU was perceived to be "GM tainted", its future would be bleak. Although this line of argument is not necessarily accurate, it confirms the intricate link between GM, Africa and the EU. Africa traditionally has strong trade links with Europe. According to the World Trade Organization (WTO), of Africa's total exports in 2000 (excluding South Africa), nearly 50% were to the EU. This is a whopping US\$67.6 billion in export earnings for the continent and the amount and percentage would be much, much higher if SA were included.

Should Africa proceed with the speed with which it is adopting biotechnology, one of the likely effects assuming the moratorium is not lifted is a slow or total shut-down of export to the EU. Of the total EU imports from Africa, about 30% is from agriculture. The (agricultural) sector is therefore the first casualty of a continued moratorium. To the dismay of Africa, research shows that European public debate on transgenic crops is centred on fear and mistrust, quite possibly resulting from the experience over 'mad cow disease'. A report from the Food Safety Authority of Ireland to address EU concerns on GM crops concluded that there is no evidence that transgenic foods are unsafe. The report, by a group led by Patrick Wall, the authority's chief executive, noted that concern in Europe is based on ethical, socioeconomic and anti-multinational issues; lack of knowledge or misinformation; environmentalism; food labelling; and consideration of the

needs of developing countries. Transgenic foods are eaten daily in the US, Australia, Canada, Mexico and elsewhere with no reported undue effects.

Nevertheless, the experts' advice does not seem to influence public opinion in Europe, probably because of a strong anti-biotechnology lobby that actively promotes misinformation and fear and also because in some cases people have had good reason to distrust 'expert' pronouncements. The critics of biotechnology claim that Africa has no chance to benefit from biotechnology and that Africa will only be a dumping ground or will be exploited by multinationals. On the contrary, small-scale farmers in Africa have benefited by using hybrid seeds from local and multinational companies, and transgenic seeds in effect are simply an added-value improvement to these hybrids. Local farmers are benefiting from tissue-culture technologies for banana, sugar cane, pyrethrum, cassava and other crops. There is every reason to believe they will also benefit from the crop-protection transgenic technologies in the pipeline for banana, such as sigatoka, the disease-resistant transgenic variety now ready for field trials. Virus- and pest-resistant transgenic sugar cane technologies are being developed in countries such as Mauritius, SA and Egypt. A disease-resistant transgenic variety is now ready for field trials.

The African continent, more than any other, urgently needs agricultural biotechnology, including transgenic crops, to improve food production. African countries need to think and operate as stakeholders, rather than accepting the 'victim mentality' created by Europe. Africa has the local germplasm, some of it well-characterized and clean, being held in gene banks in trust by centres run by the Consultative Group of International Agricultural Research. It also has the indigenous knowledge, local field ecosystems for product development, capacities and infrastructure required by foreign multinational companies. The needs of Africa and Europe are different. Europe has surplus food and is not experiencing hunger, mass starvation and death on the regular scale we sadly witness in Africa. The priority of Africa is to feed her people with safe foods and to sustain agricultural production and the environment. One of the real solutions to the EU moratorium is for African countries to trade with each other and to seek new markets. Africa missed the green revolution, which helped Asia and Latin America achieve self-sufficiency in food production. Africa cannot afford to be excluded or to miss another major global 'technological revolution' because of the "blackmail" of trade.

### **Monsanto helps develop enhanced maize for Africa**

Crop Biotech Net, 17 Oct 03. <http://www.monsanto.com>

Monsanto donated critical information to aid in developing one of HarvestPlus' newly announced projects, a nutritionally improved African variety of maize with increased levels of provitamin A. Maize is a primary crop in Africa where vitamin A deficiency is prevalent. HarvestPlus is a biofortification project coordinated by the Consultative Group on International Agricultural Research (CGIAR).

HarvestPlus is investigating a variety of approaches to nutritionally enhance maize, wheat, rice, sweet potato, cassava and common beans. These approaches include conventional breeding and plant biotechnology. In addition to provitamin A enhancement, researchers are also examining ways to boost the iron and zinc content of these crops, which could further increase their nutritional value.

A major component of the project will focus on training scientists from Africa on plant science, biotechnology, and nutrition, to build local expertise in these areas. Safety testing, efficacy studies, education, and analysis of delivery systems will precede the development and introduction of the enhanced maize.

#### **South African food fortification**

**By the end of Oct. 2003 all maize meal and white and brown bread flour will be fortified with the following micronutrients: Vitamin A, thiamin, riboflavin, niacin, pyridoxine, folic acid, iron and zinc.**

**Pick'nPay update, Winter 2003**

## The African Agriculture Technology Foundation

AgBioView 20 Oct 03. <http://www.aftechfound.org/>

The AATF is a new and unique public-private partnership designed to resolve many of the barriers that have prevented smallholder farmers in Africa from gaining access to existing agricultural technologies that could help relieve food insecurity and alleviate poverty. The AATF will be based in Africa and will be led, managed and directed by Africans. Our Mission: "To improve food security and reduce poverty of smallholder farmers in Sub-Saharan Africa by facilitating public private partnerships that provide access to agricultural technologies, materials and know how and that facilitate existing institutions along the value chain to ensure delivery of products to African farmers and create sustainable markets."

Why Africa? Why now? Sub-Saharan Africa has the highest hunger and malnutrition rates, and the least productive agriculture, in the world. Yet there is a range of agricultural technologies, many of them generated by the private sector in developed countries that could benefit African smallholder farmers. If adapted and made available to poor African farmers, these technologies could help improve production systems, increase food security, reduce poverty, improve agricultural trade and commerce, and stimulate broader and more equitable economic growth.

However, neither the private sector nor the public sector alone can exploit this potential. The private sector has significant technological resources but currently no commercial incentive to develop products of benefit to resource-poor African farmers. The African agricultural market is simply not large enough to warrant investment by major agricultural companies in specific technologies, varieties and traits to meet the unique conditions of African farming.

Public sector organizations in Africa have vast experience working on regionally important crops, but need improved access to proprietary technologies that are held by the private sector as well as public sector institutions wherever they exist. The issues surrounding the availability, licensing, testing, safety and liability of agricultural technologies are so complicated, and involve such high transaction costs, that many of those technologies remain out of the reach of African researchers and development specialists.

While a growing number of companies wish to make their technologies available for humanitarian use in Africa, their efforts to do so have been limited by concerns linked to Intellectual Property (IP), protecting commercially important markets and liability. The AATF has been designed to identify and facilitate the royalty-free transfer of proprietary technologies that meet the needs of resource poor African farmers, in ways that address and resolve the concerns of technology providers.

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## Canadian gov funds GM tree trial

CBC News via Agnet II, 20 Oct 03. From LSN 21 Oct 03

The Canadian federal government is funding a field trial of GM trees near Quebec City, which researchers with the Canadian Forest Service say will help protect the country's natural forests. Researchers have planted a plot of 400 GM spruce and poplars in the woods near Val Cartier. Research scientist Armand Séguin of the Canadian Forest Service says it is the only field trial of transgenic trees in the country. The trees look normal, he says, but they have an extra gene to protect them from spruce budworm and other insects without resorting to pesticides. Séguin says there's no chance the modified trees will cross-pollinate with their neighbours either during or after the field test. "We have to monitor for 5 years after the end of trial to make sure there is no trace of that material in the environment, and everything has to be destroyed by burning," says Séguin.

## UK Royal Society to release farm scale evaluations

CropBiotechNet, 17 Oct 03. [http://www.pubs.royalsoc.ac.uk/phil\\_bio/news/fse\\_toc.html](http://www.pubs.royalsoc.ac.uk/phil_bio/news/fse_toc.html)

The results of the Farm Scale Evaluations (FSEs) will be published today in *Philosophical Transactions: Biological Sciences*, a journal of the Royal Society in the UK. According to the Royal Society, results reveal significant differences in the effect on biodiversity when managing GM herbicide-tolerant (GMHT) crops as compared to conventional varieties. The study emphasizes the importance of weeds within crops in sustaining natural communities within and adjacent to farmer's fields.

A total of 8 papers were published. They looked at the effects on: weeds in the fields, weeds on invertebrates in the fields, weeds and invertebrates in the field margins, and on the effect of contrasting herbicide regimes on both weeds and invertebrates as a whole.

Some of the major highlights of the study according to the Royal Society include:

- x Significant and variable impacts of GMHT cropping in beet, maize and spring oilseed rape on the arable weeds when compared to current commercial practices. In GMHT beet and oilseed rape crops, more effective weed control lead to the decline in the number of weed seeds left in the soil at the end of each growing season.
- x Differences in GMHT and conventional crop herbicide regimes had a significant effect on the capture of most surface-active invertebrate species and larger groupings in at least one crop, with most increases occurring in GMHT maize and most decreases occurring in GMHT beet and oilseed rape.
- x The effect of GMHT cropping on the interaction between invertebrates with different feeding habits was studied by examining the relations between plants and the abundance of insects grouped according to their feeding preferences. The negative effect of GMHT cropping on weeds in beet and spring oilseed rape, and the positive effect in maize, resulted in similar changes higher up the food chain.

## UK field trial results spark NZ debate

Newstalk ZB, 17 Oct 03. From Life Sciences Network. 17 Oct 03

The result of field trials in the UK on GM crops are adding weight to the New Zealand (NZ) debate from both sides of the GM argument, Newstalk ZB reports. NZ Green Party co-leader Jeanette Fitzsimons says the results sound a warning bell for NZ and show the need for serious ecological studies here. But the NZ Life Sciences Network does not agree. Executive Director Francis Wevers says if British consumers are sceptical about GM, it only proves how ignorant they are. He says all agricultural systems are designed to reduce impact on the crop due to pests, and all this study has shown is that GM crops which are tolerant to herbicide result in a reduction of weeds in fields where those GM crops are grown. He says this is what would be expected because that is the way the system has been designed. He says that results in a reduction of insects that feed on those weeds, which then impacts on bird life, none of which is unexpected. Mr Wevers told Newstalk ZB that the pernicious impact of chemical means of controlling weeds has a much greater impact on the environment. The trials did not consider the impact of GM crops on human health.

## All sides claim victory in GM trial results

BBC News, 16 Oct 03. From Life Science Network 17 Oct 03 (shortened)

The UK Government said it would consider the latest research on GM crops carefully before deciding whether to allow the plants to be commercialised. "I have said consistently that the government is neither pro nor anti-GM crops - our overriding concern is to protect human health and the environment and to ensure genuine consumer choice," Environment Secretary Margaret Beckett said. She spoke after scientists revealed the results of a 3-year study of GM herbicide-tolerant crops. The tests of 3 biotech crops found the cultivation of 2, an oilseed rape and a beet crop, to be more harmful to many groups of wildlife than their conventional equivalents. The production of a 3<sup>rd</sup> biotech plant, maize, was shown to be kinder to other plants and animals than the normal crop.

The slightly contradictory results of the £6m study allowed all sides in the debate on novel crops to claim "victory". GeneWatch, a science and policy group which looks at the issues surrounding genetic engineering, described the results of the trials as "shocking". "The UK's farmland wildlife has been decimated by intensive farming," said director Sue Mayer. "If we grow herbicide tolerant crops here it may be the final nail in the coffin for some species." And environmental campaign group Friends of the Earth said the trials had a dark warning for the British countryside.

"The impact of GM crops on wildlife is very dramatic," said Tony Juniper, the group's director. "The government has got no alternative but to stand by its pledge to ban GM crops in the UK." He claimed failure to act could lead to birds such as the skylark becoming extinct in Britain. The pro-biotech campaign group CropGen interpreted the results differently. It said the so-called farm-scale evaluations (FSEs) showed GM technology, if managed properly, could benefit the environment as well as farmers and consumers. "Today is a momentous one for UK agriculture," CropGen said in a statement. "GM Maize is good for farmers, better for biodiversity and is ready for commercial cultivation." Many commentators recognised the FSEs represented only another stage in the GM debate and that much more research was required to prove the effectiveness of GMs and that work would have to be done on a crop-by-crop basis.

Sir Ben Gill, president of the National Farmers' Union, said: "The decision on whether to allow these crops to be grown commercially now lies with the government and it must be taken on a case-by-case basis using all the available evidence, including these trials. "It must be remembered that these results primarily look at farmland biodiversity. Studies to develop best practice for the management of these crops, should they be approved, will be important if farmers are to deliver maximum environmental benefits." Dr Guy Poppy, an ecologist at Southampton University, said it would be wrong to make "all or nothing decisions" about GM technology based on the FSE results. "What we need to do now is ensure that the benefits of GM outweigh any risks, as is the case for maize. "It is imperative that we don't throw the baby out with the bathwater and lose the benefits that some GM crops can offer."

The trial results will now be assessed by Acre (Advisory Committee on Releases to the Environment), the agency that will advise the government on their implications. A decision by ministers on whether to commercialise the crops could come later this year, or early in 2004. Shadow environment secretary David Lidington said: "These results deserve careful study. I shall want to hear the views of other scientists on the findings published by their professional peers. "The fact that the impact of different GM seeds on wild plants and invertebrates varies so markedly shows that we must proceed with scepticism and caution."

## **QUOTE:**

**John Pidgin, the manager of one of the set of (UK farm) trials, says that although it would be wrong to extrapolate the results of the trials directly to developing countries, the main implication that the impact of a GM crop depends heavily on the specific characteristics of the crop and the way that it is grown remains valid.**

GM Crop Trials Provide Mixed Message  
David Dickson, SciDev.Net, 16 Oct 03

## **Time to choose**

Peter Aldhous (chief news and features editor), Nature 425, 655 (16 Oct 03). From AgBioView 17 Oct 03 (shortened)

In some countries, transgenic plants are already a part of mainstream farming. Will the rest of the world soon follow suit? Anyone attempting to predict the future is asking for trouble, especially at the cutting edge of science and technology, where the unexpected is the norm. But for the past few years, there has been one forecast that scientific soothsayers have been able to rely on: that controversy will rage over GM crops. So to say that agribiotech is now in for a volatile time might seem like an empty prediction. But there are good reasons to believe that the fight over GM crops is coming to a head.

Most European governments, realizing that their people have little enthusiasm for GM food, have

been stalling on deciding whether to allow commercial plantings of transgenic crops. But following the introduction of a regulatory framework at the European Union (EU) level, they won't be able to stall for much longer. Decision time is dawning. If European countries say yes, they will face an onslaught from their own public. If they say no, the pro-GM US government will be spoiling for a fight. Already, the US has fired a warning shot across Europe's bow, lodging a complaint with the World Trade Organization over the EU's failure to open its markets to GM seeds and produce.

In Britain, the government has prepared for decision time by conducting by far the largest-ever trial of GM crops, seeking to gather as much evidence about their impact on biodiversity as possible. Those trials, along with extensive scientific evaluation and public consultation, are now coming to an end. But ultimately, the government's line may be influenced as much by Prime Minister Tony Blair's sagging popularity as by the scientific questions surrounding transgenic agriculture.

The outcome in Britain is bound to influence the debate in other countries where similar skirmishes are taking place. Around the world, environmentalists are battling with biotech-industry lobbyists to win over public opinion. In the developing world, the action is poised to intensify, with sub-Saharan Africa emerging as an important new battleground. In other countries, such as China and India, the fight seems to be not so much 'GM or not GM', but rather between home-grown transgenic technologies and imports from agribiotech giants in the US.

So far there is no clear winner. Our international survey of the extent of commercial cultivation of GM crops reveals a decidedly mixed picture. Only a few countries have wholeheartedly embraced a transgenic future. But the agribiotech industry can point to several key markets where the prospects for GM farming are improving. Brazil, for instance, is the world's second-largest producer of soya beans and there the tide seems to be turning in favour of GM varieties. For now, our world map showing the market penetration of transgenic crops remains mostly blank. How quickly it fills up will depend on events and decisions that cannot be avoided for much longer.

### **Nature's Bounty is rich in pesticides**

Professor V. Moses (Chairman, CropGen), Department of Life Sciences, King's College London. Times (UK), 16 Oct 03. From AgBioView 17 Oct 03 (shortened)

Mr George Hewitt says: "Nature, in her wisdom, packs each food with (most of) the enzymes, mineral elements, etc, necessary for proper human digestion." (Letter to Times, Oct 13). Unfortunately, nature does not. All our crop plants and domestic animals have been carefully bred over centuries to maximise the nutritional benefit for ourselves and to minimise toxins and other undesirable molecules. Even so, of the pesticides in our diets, almost all are chemicals produced by the plants themselves. There are 27 in many common foods which are rodent carcinogens (and no doubt have similar effects in us).

They include basil, Brussels sprouts, cabbage, cauliflower, celery, cocoa, coffee beans roasted, fennel, honey, jasmine tea, mango, mushroom, parsley, pineapple, sesame seeds and many fruits. Most of the 10 000 natural pesticides in our daily fruit and vegetables are carcinogenic in rodents when applied at the right dose. Frying or smoking food doubles its carcinogen content. Nature is not some benevolent system intended primarily for our benefit but, as Darwin and others have shown over and over again, an environment in which species are in a constant competition for limited resources. We do so well because we can compete.

**"Instead of just sitting here and agreeing amongst ourselves that it is good, we have an obligation to explain to the public who are indirectly funding the researches currently being carried out, what it is we are talking about,"**

Participant and the BTZ Biotechnology workshop, Harare, 27-28 Oct 2003.

## Convection method copies DNA faster

Nature Science Update, 21 Oct 03. From LSN 21 Oct 03 (shortened)

A new automated process speeds up DNA copying - one of the central processes in genetic analysis and biotechnology, the journal Nature reports. Convection, the circulation of hot liquids, can drive a chain reaction that makes strands of DNA multiply exponentially fast, show Dieter Braun and colleagues at Rockefeller University in New York. Already, the team's prototype system generates DNA copies 4 times faster than standard techniques. It makes 100 000 copies from a single DNA strand in less than half an hour, and could be miniaturized to just one-tenth of a millimetre, the researchers claim. The convection method could drive convenient pocket-sized devices for quick, on-the-spot DNA analysis, for example in medical genetic screening and forensic science. DNA replication is often necessary in these situations in order to produce enough material for analysis from a tiny sample.

Replication of DNA happens in living organisms every time a cell divides. During the 1980s, scientists figured out how to do it artificially in a process called the polymerase chain reaction (PCR). A length of DNA, the famous double helix, can be copied by separating the 2 strands and using each of them as a template. In living cells this assembly process is carried out by an enzyme called DNA polymerase. PCR uses DNA polymerase in a 2-stage procedure. First, the double helix is warmed up to disentangle the twin strands. Then the system is cooled down, and DNA polymerase sets to copying each strand, generating two double helices from the original one. Repeating the cycle creates 4 double strands from 2, and so on.

Braun and colleagues conduct PCR in a circular chamber 5 millimetres wide, heated from beneath its centre. This sets up a convection current - hot water rises in the middle of the chamber and flows towards its edge, where it cools and sinks. There is no need to use an alternating cycle of heating and cooling. The enzyme copies single DNA strands at the chamber's cool periphery and these strands then pair up. The convection current carries the double strands to the hot centre, where they are prised apart before being borne back to the edges. A similar process was first suggested last year by researchers at the University of Michigan. But in that case the convection current was stronger and more chaotic, and it produced a mixture of different DNA chains rather than pure copies. In the latest set-up, the copies are virtually all perfect. The researchers suggest that convection in natural systems on the early Earth, for example, near undersea volcanic vents, might have helped to drive the replication of primitive information-carrying molecules akin to DNA.

## CIMMYT to check on transgenes

Crop BiotechNet, 24 Oct 03. (shortened)

The International Maize and Wheat Improvement Centre (CIMMYT) in Mexico is spearheading efforts to develop protocols that ensure that transgenes are not inadvertently introduced into its gene bank accessions or breeding materials. Suggestions to make this possible were given during a workshop on "Technical Issues Related to Sampling and Detection of Adventitious Transgenic DNA Sequences" at the CIMMYT headquarters. These include:

- x The most appropriate technique is the use of immunological tests (ELISA) that are commercially produced and extensively used by the seed industry. This technique is easy to use, produces rapid results, inexpensive, portable, and sensitive.
- x Initial tests will be conducted for the presence of certain coat proteins in commercially available GM maize seeds/products.
- x The acceptable adventitious presence of transgenes for commercial grain currently ranges from as high as 5% for Japan to as low as 0.9% for the EU. The working group recommended that CIMMYT consider a conservative level of 0.5%.
- x For its maize gene bank, CIMMYT will continue to collect and maintain genetic resources without modifying their genetic structure. All introductions and regenerations introduced into the bank after 1996 (the year commercial transgenic maize was brought into the market) will be analyzed for the presence of transgenes.
- x CIMMYT will screen all maize introductions, regardless of the country of origin, to ensure that transgenes are not inadvertently incorporated into its breeding programme.

CIMMYT is currently reviewing the protocol developed during the workshop. <http://www.cimmyt.org>.

## Study confirms superiority of Bt cotton in fighting pests

Business Standard, Our Commodities Bureau in Mumbai, 9 Oct 03

A study conducted by the University of Agriculture in Dharwad has revealed that the cultivation of Bt cotton results in reduction of pesticides. The study concluded that more Bollworm damage was recorded on the conventional cotton and NHH - 44 hybrids (the commonly used local hybrid) as compared to Bt cotton. While Bt cotton required only 3 to 4 applications of pesticide for bollworm control, the conventional cotton and NHH - 44 hybrids required 4 to 9 sprayings in both locations.

The study also said that Bt cotton cultivation translated into lower cost for the farmer and increased profitability. The Bt cotton plots accounted for a spend of only Rs.750 and Rs.1,210 on plant protection input costs per acre, as opposed to Rs. 1180 and Rs. 3310 on conventional cotton in the university's research station farm and Nelahal locations respectively. At the end of the study, it was found that the Bt cotton plots recorded a net profit of Rs13 998 and Rs13 521 per acre in the University's research station farm and Nelahal village which implied an increase of 31.12% and 42.18%, respectively.

It was also found that sucking pest incidence, particularly 'thrips', in the early stage and 'aphids' in the later stage was equal in all the cotton plots in both locations. Conducted at Regional Agricultural Research Station (RARS), Raichur, Karnataka, the study involved actual trials and collation of primary data to study the behavior of pests and their impact on cotton.

The study was conducted in 2002-2003 and the trials were undertaken at the university's research station farm and Nelahal village in district Raichur. At each location, 3 hybrids and a local popular hybrid were cultivated on 1 acre, and after taking into account the input cost in each location, the economic benefits were calculated. The principal investigator in this study, B V Patil was currently an associate director of research and headed the entomology department at RARS in Raichur.

Commenting on the findings, he said, "For a long time now there's been a debate on the Bt Cotton issue. For us, this was a fact-finding mission and we are confident of the veracity of our research and are convinced that Bt Cotton does play a significant role in reducing the farmer's worries. Our study clearly establishes the fact that if the maximum benefits have to be derived from cultivating Bt Cotton, then it is important to isolate the crop from normal cotton or other hybrids and cultivate it separately. This would ensure pest resistance and better yields."

## Overview on EU food laws

Crop BiotechNet, 24 Oct 03 (shortened)

The European Union (EU) recently released a report that gives an overview of the EU food laws that are currently adhered to by its member states. These food laws will also be implemented in the 10 Central and Eastern European countries that will join the EU on May 2004. Stated in the report are rules on: labeling requirements, packaging and container requirements, food additive regulations, pesticides and contaminants, copyright and/or trademark laws, and import procedures. The EU's single market concept ensures that all food products, whether produced within the EU or imported from developing countries, are able to move freely throughout the EU markets upon compliance with the directives.

Further, free movement of food products is also guaranteed only when all aspects are covered by the harmonized legislation: e.g. when a food product has complied with the labeling directive but poses a health risk for which harmonized rules do not yet exist. In cases where EU regulatory harmonization is not yet in place, imported food products must also meet the existing requirements of the member state concerned.

The full report can be downloaded at <http://www.fas.usda.gov/gainfiles/200310/145986463.pdf>.

## Snippet:

### SA AIDS Vaccine Initiative

Cape Biotech Initiative

**The South African AIDS Vaccine Initiative (SAAVI) was formed in 1999 as a lead programme of the Medical Research Council (MRC) of South Africa. SAAVI was established to co-ordinate the research, development and testing of HIV/AIDS vaccines in South Africa. SAAVI is based at the MRC and is working with key national and international partners to produce an affordable, effective and locally relevant preventative HIV/AIDS vaccine in as short a time as possible. Dr Tim Tucker is Director of SAAVI.**

The web site for more information is <http://www.saavi.org.za/>

### GE potato has healing potential

NZ Herald, 26 Oct 03. From LSN 28 Oct 03

Scientists have genetically modified a potato to produce a protein that helps the body to repair itself after surgery. A team from Singapore Polytechnic and New Zealand's Crop and Food Research says the protein is so valuable that the potatoes could be grown only in containment avoiding worries about genes "escaping" into the environment. Crop and Food scientist Tony Conner said that each gram of the protein, extracted from about 7 potato plants, was worth about \$1 million. "We can make a synthetic gene and transfer it into potatoes, and the potatoes produce the protein," he said this week. "We have been able to extract it and purify it. The issue is whether there is sufficient protein to scale it up and go to the next level." The protein helps the body repair itself after heart or circulatory system surgery or nervous diseases.

The idea of making it in potatoes dates from the early 1990s, when Singaporean student Oi Wah Liew did her doctorate at Lincoln University near Christchurch, where Conner is a part-time professor. Liew is now a lecturer at Singapore Polytechnic, but returns to Lincoln once a year to work on the potato project. In 1999 she told a German news agency that she took the gene from a rat and used it in potatoes to make a hormone called atrial natriuretic factor, which occurs in the hearts of humans and other mammals. At present, the only source of the substance for medical use is from dead human bodies. Conner said that now that the technology was proven in potatoes, he and Liew might try to duplicate it in a non-food crop such as tobacco in order to reduce public concerns about tampering with a staple food.

The institute is developing other plants with health properties such as boosting selenium, a trace element in soils which helps people to stave off heart disease and HIV/Aids. It is deficient in many soils in New Zealand, China and elsewhere. "We are trying to understand the nature of selenium accumulation and uptake in plants and whether we can improve that by management or classical breeding or whether it might be a GM approach," Conner said. "We are trying to use genes from some of the brassicas because they are known to be accumulators."

### Breast cancer study supports genetic testing

Nature, 24 Oct 03. From LSN 28 Oct 03

Women with defects in 1 of 2 genes are highly likely to develop breast cancer, researchers have found. But a healthy lifestyle can reduce this risk. About 10% of women with breast cancer have mutations in genes called BRCA1 and BRCA2. Those who also have relatives with breast or ovarian cancer have an 80% chance of developing breast cancer, compared with 10% in the general population. The risk is also close to 80% for women with BRCA mutations but no affected family member, the new study has found. "The risks are high, full stop," says lead researcher Mary-Claire King of the University of Washington, Seattle.

The finding strengthens the case that all women with a positive genetic test should embark on preventative treatment, such as regular breast screening or even removal of the ovaries. Screening all women might be worthwhile, adds cancer researcher Ephrat Levy-Lahad of Shaare Zedek Medical Centre in Jerusalem, Israel. "This study really supports the idea," she says.

#### Nature and nurture

Lifestyle is also important, the team found. For example, women born after 1940 with a mutation in 1 of the 2 genes have a 67% risk of developing breast cancer by the age of 50. For those born before 1940, the risk is only 24%. This backs suggestions that modern lifestyles have boosted the risk of breast cancer, although it is not clear why. More sedentary lives might play a part. Exercising and staying slim as a teenager tended to delay the age at which women with mutations developed cancer by several years, the study shows. "There's a major environmental effect on top of the genetic one," says Levy-Lahad.

Doctors genetically tested more than 1 000 female New Yorkers with breast cancer and then tested the families of those with BRCA mutations. The team studied Ashkenazi Jewish women because they carry a handful of mutations that are easy to screen for but doctors say that the risks are applicable to the general population. Researchers now hope to track down other genes or factors that predispose women to breast cancer.

### Consumers may pay premium for GM products

Checkbiotech, 24 Oct 03. From LSN 28 Oct 03

Consumers may be willing to pay a premium for certain GM foods if they are told of the potential health benefits they may receive from eating those foods, according to a recent Purdue University study. Jayson Lusk, associate professor of agricultural economics and author of the study, used a mail survey to assess how much consumers are willing to pay for a GM food called golden rice. His paper appears in the November issue of the American Journal of Agricultural Economics. Lusk found that regardless of demographic factors, including age, gender, income and level of education, consumers may be willing to pay more for the GM golden rice versus a non-GM white rice, if they perceive a direct personal benefit from the GM product.

"This study is one of the first to show that people are willing to pay a premium for a food that's been improved using biotechnology," Lusk said. "People value this product such that they are willing to pay more for it." Golden rice, which is not yet commercially available, contains a daffodil gene that produces a compound the human body converts to vitamin A. Lusk provided background information about golden rice to all survey participants. Lusk said consumers in previous studies indicated they would pay a premium for foods that had not been genetically modified - the exact opposite of what he found in this study. He attributes that difference to this study's emphasis on the potential benefits of golden rice from a consumer's, rather than a producer's, point of view. "The first generation of GM products came from technologies that tended to benefit farmers, like Roundup Ready crops and Bt corn," Lusk said. "Consumers don't see a lot of benefit from those products except for perhaps a very small decrease in price. Other than that, consumers have been asked to take a risk without any benefit to them at all," he said.

Lusk said the next generation of GM foods will be those like golden rice that provide direct benefits, such as improved nutritional quality or enhanced shelf life, to the consumer. As the biotechnology industry shifts more of its promotion effort to these second generation crops, he said producers will need to know if consumers will be more accepting of GM foods that offer benefits to them. "While consumers might perceive somewhat of a risk with GM foods, they may also see a benefit. In this study, it appears that the nutritional benefits of a GM food outweigh their perception of risk," he said.

#### EU food regulation

The new EU proposal for regulation on the hygiene of foodstuffs will enter into force on 1 Jan 2004 and requires imports into the EU to comply with these rules. The final draft of South African legislation to enable compliance is available on the DoA Quality Control webpage [www.nda.agric.za/docs/plantquality/default.htm](http://www.nda.agric.za/docs/plantquality/default.htm). The DOA is running information session around the country for clarification. Contact Portia Mahlangu on tel 012 319 6048 or [portiam@nda.agric.za](mailto:portiam@nda.agric.za). Information on affected exports must be registered on a national database. The template for entry is available at the same website - look under Food Safety.

## Meetings, Courses and Workshops

**29 March – 1 April 2004: Theoretical Course “RNA Structure and Function”** – Trieste, Italy. **Closing date for applications 17 Nov 03**. Contact Tel: +39-040-3757333; Fax: +39-040-226 555; Email: [courses@icgeb.org](mailto:courses@icgeb.org)

**19 - 23 April 2004: Workshop “Introduction to Biosafety and Risk Assessment for the Environmental Release of Genetically Modified Organisms (GMOs): Theoretical Approach and Scientific Background”** – Trieste, Italy. **Closing date for applications 10 Nov 03**. Contact Tel: +39-040-3757333; Fax: +39-040-226 555; Email: [courses@icgeb.org](mailto:courses@icgeb.org)

**25 June - 2 July 2004: Practical Course “Bioinformatics: Computer methods in Molecular Biology”** – Trieste, Italy. **Closing date for applications 19 Jan 04**. Contact Tel: +39-040-3757333; Fax: +39-040-226 555; Email: [courses@icgeb.org](mailto:courses@icgeb.org)

**15 – 18 Nov 2004: Workshop “Bacterial Genetics: Global Regulation of Gene Expression in Bacteria”** – Trieste, Italy. **Closing date for applications 21 June 04**. Contact Tel: +39-040-3757333; Fax: +39-040-226 555; Email: [courses@icgeb.org](mailto:courses@icgeb.org)

**22 Nov – 3 Dec 2004: Theoretical and Practical Course “Analysis of Stress Responsive Plant Genes”** – New Delhi, India. **Closing date for applications 1 Aug 04**. Contact Tel: +91-11-2616 7356; Fax: +91-11-2616 2316; Email: [shubha@icgeb.res.in](mailto:shubha@icgeb.res.in)