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## **Ethiopian premier says Africa should not reject GM food**

UN Integrated Regional Information Network, Via BBC Monitoring Nairobi, 6 Jul 04 (shortened)

Africa should not reject GM crops as a means of tackling its massive hunger, Ethiopian Prime Minister Meles Zenawi said in Addis Ababa. Speaking after an international summit on hunger, Meles said traditional technology and biotechnology could be used in tandem. "Should we rule out GM crops or biotechnology as a weapon in our arsenal? No. Why should we rule out any technology? GM technology is like every other technology," Meles told journalists. "It could be used well, or it could be misused. The issue is how to use it well. I think it can be used well if it is used safely and if it does not increase the already big power of huge multinationals at the expense of the small-scale farmer."

Prof Jeffrey Sachs, the special adviser to UN Secretary-General Kofi Annan on the Millennium Development Goals (MDGs), agreed. "I think agro-biotechnology is an important tool that can add a lot to the food security and incomes of African farmers," Sachs said. Both had spoken out at the summit, which aimed to establish sound policies towards halving the chronic hunger facing 200 million Africans each year by the target date of 2015. The target is one of the 8 MDGs agreed by international leaders in 2000 towards reducing poverty, hunger and disease across the globe.

Meles said African leaders needed to do more in key areas like governance and conflict on the continent as the main factors. "Without peace and stability there cannot be a sustained attack on poverty and hunger," he told journalists at a press conference after the one-day summit. "And we in Africa are the main causes of the problems of instability in our continent, and lack of leadership in this regard has been an issue." Meles added that the stalled peace process with Eritrea was hindering development. "The lack of progress on that count is a problem both for Ethiopia and Eritrea," he said of the two-year deadlock since an international decision aimed at ending their

tensions along their 1 000 km common frontier. He stressed that Ethiopia "unequivocally" ruled out a return to arms to resolve the deadlock. "Only a peaceful solution will do," he said, adding that the matter had been raised with Annan. Meles also argued that poor implementation of policies had often been responsible for failures to reduce poverty, but said this was mainly due to a lack of human skills. He added that developed nations "use this as an excuse to fail on their repeated promises" while African nations used those failures as an excuse for their own flaws. He stressed that if continents like Africa continued to suffer from hunger there could be no global stability or security in rich nations. "There is no security for the West without security for the rest," he said. "Security for the rest is primarily a matter of food security and fighting hunger."

## **Bid to quell fears about GMOs in South Africa**

Independent Online, 8 Jul 04. Via AgBioView 8 Jul 04.

[http://www.iol.co.za/index.php?set\\_id=1&click\\_id=13&art\\_id=vn20040708040921747C378261](http://www.iol.co.za/index.php?set_id=1&click_id=13&art_id=vn20040708040921747C378261)

The agriculture department sought to dispel fears about GMOs in South Africa (SA). All GMOs in the country had gone through a rigorous assessment process taking into account human, animal and environmental safety factors, the department's director of genetic resources, Julian Jaftha, said in Pretoria. "All GMOs that are available have gone through the same process and we are confident that all concerns have been adequately addressed," he told the Agricultural Writers Association. "Not everything is just approved and put out there." Jaftha described in detail how GMO licensing applications are processed, saying the emphasis was on access to sufficient, safe and nutritious food and the sustainable management of the country's natural agricultural resources.

The government believed biotechnology could play an important role in eliminating poverty and hunger, but also recognised the potential risks, he said. The appraisal of each application involved an assessment of safety and the socio-economic impact, and the evaluation of submission from the public and affected sectors of the economy. There was also inspection and monitoring after an application had been approved. Jaftha said 10 applications for trial releases (the planting of crops for trial rather than commercial purposes), one for contained use (in a laboratory) and one for a commodity clearance (using a GMO product only for food and feed but not planting) were received between January and June. The latter application has since been withdrawn. None of the other 11 have yet been adjudicated upon, and some of them are to be considered this week.

According to a departmental document, GMOs commercially available in SA by last year were insect resistant maize and cotton, and herbicide-tolerant cotton, maize and soybean. GMO safety was the topic of a recent Pretoria High Court application by environmental lobby group Biowatch. It wanted to compel the government to divulge details of all GMOs brought into or manufactured in the country to date. The body sought a court order directing the State provide a list of facts concerning each permit, approval and authorisation granted for all GMO imports, exports, field trials and general releases to date. Judgment in the application is expected early next month.

Jaftha said the department was obliged to provide certain safety information in any event, but some data was classified as trade secrets. Any party seeking information was free to lodge an application through the Promotion of Access to Information Act or the Administrative Justice Act. Regarding an objection by Grain SA to an application by biotechnology company Monsanto for an import permit for GM maize for human and animal consumption, Jaftha said the application had not yet been received. Once it is, the objection would be considered as part of the evaluation process. Grain SA expressed concern that the maize could be used for domestic production purposes, as importers could not guarantee that it would be immediately milled or fed as whole grain to animals.

## **Annan calls for green revolution to feed Africa**

Andrew Quinn, Reuters, 5 Jul 04 (Via Agnet; Via AgBioView 6 Jul 04)

UN Secretary General Kofi Annan was cited as telling a food conference ahead of this week's African Union summit in the Ethiopian capital that Africa was unlikely to reach its target of halving hunger by 2015, leaving millions doomed to chronic poverty and vulnerable to everything from natural disasters to the global AIDS epidemic, adding, "Let us generate a uniquely African Green Revolution - a revolution that is long overdue, a revolution that will help the continent on its quest for dignity and peace."

The story says that Africa has largely missed the benefits of earlier Green Revolutions which harnessed technological advances to triple food output in Asia and Latin America, dramatically lowering the number of undernourished people. Nearly 200 million people, or one-third of adults in sub-Saharan Africa, remain severely undernourished, and food output is declining in 31 out of 53 African countries despite a population expected to double to 1.5 billion by 2030. The story goes on to say that among the strategies presented at Monday's meeting, and already in practice in countries ranging from Ethiopia to Ghana, were improving small-scale irrigation and water collection, broader use of fertilisers to heal exhausted soil and school food programmes to both improve child nutrition and provide fresh markets for farmers. Annan also urged African countries, some of which resist the use of GM crops, not to shy away from biotechnology as long as it is developed judiciously and used with adequate safety and transparency measures.

### **Protesters destroy Finland's study on GM trees**

Cordis News, 24 June 04. From AgBioView 1 Jul 04 (shortened)

[http://dbs.cordis.lu/cgi-bin/srchidadb?CALLER=NHP\\_EN\\_NEWS&ACTION=D&SESSION=&RCN=EN\\_RCN\\_ID:22235](http://dbs.cordis.lu/cgi-bin/srchidadb?CALLER=NHP_EN_NEWS&ACTION=D&SESSION=&RCN=EN_RCN_ID:22235)

Finland's only field study on GM trees in Punkaharju in the eastern part of the country has been attacked and destroyed. The 400 GM birch trees were chopped down or torn up by their roots. This has obliterated the nation's only research into the environmental impact of genetic modification on forests, deplored officials. 'The research investigated the possible environmental effects of doing field studies using GM materials. It would have been extremely important to find out about these issues,' said Juhani Haggman, head of the Punkaharju site. 'We lack research on how genes work,' Mr Haggman added. 'We are talking about several hundreds of thousands of euro in losses. The highest estimates that have been aired have been close to a million euro. Then there's the value of the research results we would have had,' said Mr Haggman.

Both the Finnish bioindustry and the forest industry have been keen to conduct research on genetically engineered (GE) trees, hoping genetic modification would reduce paper-making costs and improve products by producing trees with appropriate traits. The research had been seeking methods to maintain a functioning transgene to begin the production of cloned and sterile 'GE-trees'. It is believed, however, that some environmental groups and anti-GM protesters feared GM trees might permanently contaminate food crops and wild species. This was the other issue the research was investigating.

### **GM plants will be used to create Aids vaccine**

Steve Connor, The Independent, 13 Jul 04. From AgbioView 13 Jul 04 (shortened)

[http://news.independent.co.uk/world/science\\_technology/story.jsp?story=540456](http://news.independent.co.uk/world/science_technology/story.jsp?story=540456)

GM plants are to be used to grow vaccines against rabies and Aids, scientists have announced. Europe's first field trial is likely to be carried out in South Africa because of fears over crop vandalism in Britain. The GM crop could dramatically reduce the cost of producing vaccines - scientists estimate they can be made at between a 10<sup>th</sup> and a 100<sup>th</sup> of the price of conventional immunisations. Dubbed "pharming" by its opponents, this is the latest step in technology which allows medicines to be grown in plants. Although this project is concerned with injectable vaccines, other trials under consideration involve extending the research to oral vaccines which might be grown in edible raw food such as bananas.

Concerns about direct action by environmentalists opposed to GM crops has led scientists behind the project to collaborate with a South African research institute which has offered to grow the first crop there. The EU has awarded 12m Euro (£8.6m) to a pan-European consortium of scientists who aim to develop the technology for growing GM plants that can be turned into vaccines against a range of common diseases in the developing world. Professor Julian Ma of St George's Hospital Medical School in London, the scientific co-ordinator of the project, said that it will take about 2 years to develop the technique before the first crop is scheduled to be grown in 2006. Clinical trials of the first vaccine derived from GM plants are planned to take place in 2009.

"Plants are inexpensive to grow and if we were to engineer them to contain a gene for a pharmaceutical product they could produce large quantities of drugs or vaccine at low cost," Professor Ma said. "The current methods used to generate these types of treatments are labour

intensive, expensive and often only produce relatively small amounts of pharmaceuticals," he said. It is likely the first pharmaceuticals crop will be GM maize or GM tobacco that will be engineered with a set of genes for making prototype vaccines against either HIV or rabies. By purifying the proteins from the harvested crop scientists hope to mass-produce vaccines at a fraction of the current cost.

South Africa's Council for Scientific and Industrial Research is participating in the research and is particularly interested in potential vaccines against HIV, the Aids virus. The Friends of the Earth GM campaigner Clare Oxborrow said: "Growing medicines in plants has serious implications for human health and the environment. We recognise the need for affordable medicines to be made available to people with life-threatening illnesses but this research could have widespread negative impacts." Professor Ma said that 3.3 million people a year die from preventable diseases such as tuberculosis and diphtheria, yet there is not the industrial capacity or funds to produce enough vaccines for everyone. "The cost of doing nothing is measured in millions of people who will die from preventable diseases," he said.

## Drugs in crops

Gregory C Phillips, Nature Biotechnology 22, 655 - 656 (June 04);  
Reprinted in AgBioView with the permission of the editor. Via AgBioView 6 Jul 04.

To the editor:

Your recent editorial concerning the production of pharmaceuticals in food crops (Nat. Biotechnol. 22, 133, 2004) raises some important issues that are being, and will continue to be, addressed by the molecular farming industry and government regulators. All parties involved agree with your view that it is of paramount importance to keep pharmaceutical products out of the food supply. Those in the industry who use maize or other food crops for the production of pharmaceutical proteins have worked diligently with the US Department of Agriculture (USDA; Washington, DC, USA) to develop protocols that will greatly reduce the already low likelihood of food contamination by a pharmaceutical product. However, a ban on all pharmaceutical products produced in any food crop would negatively affect the feasibility of economic large-scale production to a point where the benefits of this technology may not be realized. Furthermore, such an across-the-board ban has no scientific basis in the risk models used to assess safety and contamination.

Many medical and product processing advances over the past few decades have come from the introduction of biotech products, including recombinant proteins. The focus of the molecular farming industry is to make feasible the large-scale production of pharmaceutical and industrial proteins that is either too costly or impractical to produce by other means. The positive consequences of success in this endeavour include a more readily available supply of pharmaceuticals, thus improving access to current treatments and potentially allowing the development and uptake of new protein-based treatments. Drugs that currently have limited means of large-scale supply, such as antibodies, clearly fit into this category. Similarly, the large-scale production of enzymes in plants can open up new, more environmentally friendly ways to degrade waste materials, for example.

Plant production systems have the added advantage of being animal-source free, and so score positively from a safety standpoint over native or transgenic animal protein sources. The choice of the plant production system has been based on an extensive and careful consideration of economic, practical and safety factors. As suggested in your editorial, high yields and developed infrastructure are advantages to producing pharmaceuticals in such food crops as maize. More importantly, maize seed has a relatively high protein content and this seed can be stored for years at ambient temperature without loss of the protein product. Thus, the breeding programmes that have given rise to such an excellent food and feed crop also make maize an excellent repository for introduced proteins. Nonfood species, such as your suggestion of *Arabidopsis thaliana*, cannot compete on these practical and economic criteria.

Furthermore, the very fact that maize is a food and feed crop makes it a perfect delivery system for such products as edible vaccines. Were a nonfood plant such as *A. thaliana* or tobacco used, safety and palatability restraints would require extensive purification of the protein vaccine before delivery, thus greatly increasing cost and reducing the potential benefits of this technology. Even with a protein purification scheme in place, the use of noncrop species can greatly increase risk factors

associated with a product. Also, several nonfood crop alternatives suffer the drawback that they can easily interbreed with wild plant populations. Thus, in selecting a production system the objective must be to realize the benefits to the technology while minimizing the risks, and due consideration must be given to both product safety and environmental safety.

The goal for food safety is to minimize risk, not to make political or arbitrary rules. It is important that safeguards are put in place that give a degree of protection to the food supply and the environment that is equivalent or superior to that in other systems used today, such as the production of pharmaceuticals in yeast and chicken eggs. The USDA has recently added many additional regulations to ensure greater safety. Companies are required to have a detailed compliance programme in place before production begins. All involved personnel are required to be trained on the procedures relevant to their area and adherence to these procedures is enforced. All equipment that enters a regulated field release site, or is exposed to the regulated articles, must be thoroughly cleaned before it leaves the site or is used for any other purpose.

Much of this equipment is often dedicated only to plant-made pharmaceutical production and decommissioned equipment must be inspected and approved by Animal and Plant Health Inspection Service (Washington, DC, USA) before it can be returned to regular service. The entire production process must be thoroughly documented and is very tightly controlled. We feel that the critical underlying focus should be on keeping the recombinant proteins out of the food supply regardless of what crop was used to make them. The crops should be grown under suitable containment conditions-rather than arbitrarily ruling out specific vehicles. Also, the risk associated with each protein should be reviewed on the basis of the properties of that specific protein, not on the basis of the production system used. The risk of potential contamination of the food supply is one associated with all genetically enhanced organisms, not just the food crops. Indeed, food supply contamination can occur with non-genetically modified or natural production systems as well!

Although plant-produced pharmaceuticals have raised concern in political debates, it is important that Nature Biotechnology reports science-based facts and arguments and does not give credence to the whims of special interest groups whose position is not science based. Our discussion here should be focused on a safe food supply, and on appropriate safety and containment issues regarding the cost-effective production of pharmaceuticals. *A. thaliana*, flax or duckweed may be appropriate choices for production of certain plant-made pharmaceuticals, but in other cases it may be maize, potatoes, tomatoes, bananas, soybeans, rice or some other food crop that makes the most sense both scientifically and economically.

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## **A vital step towards global food security**

M.S. Swaminathan and Per Pinstrup-Andersen. Financial Times, 4 Jul 04. Via AgBioView 6 Jul 04

An extraordinary treaty came into force. The International Treaty on Plant Genetic Resources for Food and Agriculture, adopted by the Food and Agriculture Organisation (FAO) of the UN, is meant to help ensure a sustainable and plentiful food supply, regardless of the challenges posed by nature or humankind. This is no small task, given the unknown impacts of future forces such as climate change, disease and poverty, and sweeping technological advances.

But unlike many treaties that enter the world in an anaemic and enfeebled state, this one comes full of vitality. It derives its energy, in part, from a unique instrument known as the Global Crop Diversity Trust. The trust, established by the FAO and the Consultative Group on International Agricultural Research (CGIAR), is building a \$260m endowment. The interest income from this endowment will fund crop diversity collections around the world, in perpetuity. Although not widely realised and appreciated, these collections form the basic building blocks of all agriculture. Without them, the treaty, and indeed humanity itself, would be the losers.

Crop diversity collections form the basis of much innovation in agriculture, containing genes that confer traits to improve yield, to cope with new or old pests and diseases, and with changing conditions such as extended drought or the salinisation of soils as sea levels rise.

Every year, farmers and breeders around the world generate scores of new crop varieties, and without them, world agricultural production would spiral downwards. Each time a gene or species is lost, we further limit our options for the future. One classic example serves to illustrate this point. In the 1970s, a virus was wreaking havoc with maize harvests in many parts of Africa and the islands of the Indian Ocean, leaving maize plants with half-formed cobs. Scientists turned to crop diversity collections, gaining access to maize varieties from a number of countries. A handful of these were found to have resistance to the disease - including certain plants from Tanzania, Reunion Island, and Nigeria - and from these the scientists were able to breed new maize varieties resistant to the virus. They eventually produced more than 100 varieties of maize, suited to all of the relevant farming systems and ecologies in Africa, improving maize yields for poor farmers across the continent.

While crop genetic diversity, the legacy of 10 000 years of plant domestication, has dwindled in farmers' fields, it is today secured in some 1 470 gene banks around the world. But most are erratically funded, and many lack the resources needed to carry out basic operations such as refrigeration or replication of seeds. A number of irreplaceable collections have been lost from maize collections in Latin America to citrus collections in China. Unless the world's crop genetic collections are secured, food security will remain in jeopardy.

The first task of the Trust is both historic and Herculean. Region by region and crop by crop, it has begun a global inventory of the material in the world's collections of crop diversity. From the large collections of the CGIAR to small national collections - whether in the Ural Mountains of Central Asia or on remote Pacific Islands - all will be accounted for. This process will enable scientists, farmers and policymakers to identify the most endangered collections, with a focus on 64 food crops and forages designated by the treaty as critical to world food security. The trust will then direct its resources towards the rescue and rehabilitation of gene-bank hot spots in urgent need of support.

But there is a hitch. Even as it begins its work, the trust is seeking the full financial backing of the world community, including national governments, foundations and the private sector. Although \$13m per year (the annual income from the \$260m endowment) may seem like a small price to pay for a unique heritage with the potential to underpin food security, the trust is not yet fully endowed. To date, \$45m has been committed, with a further \$60m under discussion. The nations of the world, whether large or small, developed or developing, have shown their commitment to this cause over 7 years of tough international negotiations to bring the International Treaty on Plant Genetic Resources into being. Given the global significance of its task, which may ultimately provide a passport to the basic human right of freedom from hunger, it is perhaps unsurprising that the negotiations were drawn out and difficult. But though the negotiators' work is done, the treaty's is only just beginning. The international community must ensure that this political achievement is complemented by the financial muscle of organisations, such as the Global Crop Diversity Trust, that have a mandate to implement their collective will.

(M.S. Swaminathan, who received the first World Food Prize in 1987, is chairman of the M.S. Swaminathan Research Foundation in Chennai, India. Per Pinstrup-Andersen, recipient of the 2001 World Food Prize, is a professor at Cornell University and the Danish Agricultural University and chairman of the Science Council for the CGIAR)

## **EU farmers eager to try biotech crops**

Thierry de l'Escaille. CBI. <http://www.whybiotech.com/index.asp?id=4543> From AgBioView 13 Jul 04

Widespread European adoption would boost production yield. Some may be surprised to learn that many European farmers are looking to plant biotech crops. Thierry de l'Escaille, head of the Belgium-based European Landowners' Organization (ELO), which represents several million farmers and other rural business owners in 25 countries that make up the recently expanded European Union (EU). "A lot of farmers in our organization are quite interested in growing GM crops," said l'Escaille. "Biotechnology could also be a good tool to help rural areas, for the economy and for the environment." As the owner and operator of farms in Belgium, France and the Netherlands, l'Escaille said he, too, would like the opportunity to plant biotech crops. He grows a variety of crops, including conventional sugar beets, maize and potatoes. Enhanced biotech varieties of all 3 of these crops have been approved for planting in the US, but not in the countries where he farms.

A recent study found that the wide-scale adoption of these 3 biotech crops in Europe could significantly increase annual production, improve farmer income by more than 1 billion Euros (US\$1.18 billion) and reduce spraying practices. "With results like these, it's easy to understand why farmers want access to this new technology," said l'Escaille. Although the public debate over plant biotechnology continues in Europe, l'Escaille said the issue has evolved to where it is now driven more by politics than by public concerns about food safety or the environment. "Five or six years ago, some people were asking legitimate questions about GMOs," said l'Escaille. "But most of those questions have been answered. With biotech crops, it's possible to grow food that is safe to eat and even better for the environment."

The British Medical Association (BMA), which at one time had questioned the safety of biotech crops, for example, recently said it supports the UK government's decision to allow commercial planting of biotech maize. Sir David Carter, chairman of the BMA's Board of Science, said it was time to "move away from the hysteria that has so often been associated with GM foods." In response to such statements by BMA and other influential groups, European attitudes toward biotechnology have gradually grown more positive since 1999. Landowners, farmers and policymakers are looking to move forward.

"My personal feeling is that many of the decision makers are looking for a solution to the dispute over biotech crops," said l'Escaille. "With more balanced information, the public is beginning to see some of the benefits of agricultural biotechnology. But I can't plant biotech crops until the market is ready for them." To date, Spain is the only country in the EU where biotech crops are commercially grown - about 5% of its acreage is planted with maize. l'Escaille said Spanish members of the ELO have been very pleased with the yield and income gains achieved with Bt maize, which is enhanced with a naturally occurring soil bacterium (*Bacillus thuringiensis*) to ward off insect pests.

On average, Bt yields were 6.3% higher than conventional varieties, according to a report from the International Service for the Acquisition of Agri-biotech Applications. That, in addition to a reduction in pesticide spraying, has translated into extra earnings of 170 Euros per hectare, or \$85 an acre. Another study suggests that the wide-scale adoption of nine biotech crops in Europe including maize, cotton, potatoes, rapeseed, rice, sugar beets, stone fruits (peaches, apricots and plums), tomatoes and wheat, could increase production, improve farmer income and reduce spraying.

l'Escaille says studies like this are stimulating the interest of farmers throughout the EU who say they need biotechnology in order to remain competitive on global markets. He said the majority of farmers in the EU are over 55 years of age and many are going out of business because their sons and daughters see no future in farming. Without access to new technologies to improve profitability, the EU farm population will continue to age and decline as young people leave the farm for more lucrative careers in cities.

Yet another concern is that biotech crop research in Europe is on the decline because of what has been perceived as the hostile political climate. While the number of biotech field trials in Europe rose sharply between 1991 and 1998, they fell by 76% by 2001, from 250 in 1998 to 61 in 2001, according to a report from the European Commission. As a result, the report said, scientists are leaving Europe to go to the US or Canada to conduct their research.

"The lack of progress on the authorizations of new GMOs is having a direct impact on research activities on GMOs and GMO field trials in Europe," it said. While l'Escaille says biotechnology isn't the only answer to those problems, it's a "partial solution" to the exodus of people from rural Europe and the "brain drain" of some of its most promising young scientists. "A lot of the pioneering work in plant improvement and genetics originated in Europe, whether it was Thomas Fairchild, the father of the modern flower garden, or Gregor Mendel, whose work was the first to identify characteristics that pass from parents to offspring," l'Escaille said. "We can't afford to miss out now. Our farmers and our rural communities need to stay profitable and competitive."

**"As a farmer, I can only speak for myself and many like me: We need access to this technology."**

Thierry de l'Escaille, head of the European Landowners' Organization (ELO)

## Better breeding through biotech

The Economist, 8 Jul 04. [http://www.economist.com/science/displayStory.cfm?story\\_id=2897125](http://www.economist.com/science/displayStory.cfm?story_id=2897125)

In many countries, biotechnology and food are uneasy bedfellows. The wholesale rejection of GM crops by consumers in much of Europe might have been expected to cause caution among firms interested in turning an honest buck from agricultural biotech. But as proponents of genetic modification are wont to point out, GM is as old as agriculture itself - for what is selective breeding for better plants and animals if it is not a form of genetic modification? One way to get around consumer suspicions while taking advantage of modern genetic technology might be to do the actual genetic modification the old-fashioned way, by mating selected sires with selected dams, but to use biotech to decide which sires and dams to mate together. And that, indeed, is the business planned by MetaMorphix, a firm based in Savage, Maryland.

A recent press release from Cargill describes its collaboration with MetaMorphix. See also Pyxis Genomics and BoviBank. Two years ago, MetaMorphix acquired the livestock genotyping business of Celera, a company founded in 1998 to sequence the human genome. It then joined up with Cargill, a big agribusiness firm, to commercialise a genetic test that will help to reveal, prior to slaughter, a cow's propensity to produce desirable meat. That task is being accomplished by analysing thousands of so-called single nucleotide polymorphisms (SNPs) in the bovine genome. A SNP is a place where the genomes of individual animals vary by a single genetic "letter" (ie, one of the chemical base pairs that encode the information in DNA). SNPs are convenient markers for different versions of particular genes, and different versions of genes result in differences between animals. What MetaMorphix and Cargill are trying to do is find out which SNPs are associated with variations in meat quality - such traits as flesh colour, amount of marbling, wetness and tenderness - so that these can be identified before an animal is killed, and suitable animals thus be reserved for breeding.

Over the past 2 years, Cargill has studied 4 000 cattle, trying to correlate MetaMorphix's genetic markers with meat quality and with other important traits, such as growth rate. Almost 100 useful SNPs have been identified from this study. The result is a prototype testing kit which the firm plans to start using in August. The first "designer meat" produced this way is expected to come to the supermarket shelves within a year. Besides enhancing flavour, marker-assisted breeding may help to improve animal health and productivity. Pyxis Genomics, based in Chicago, has linked up with BoviBank, a Norwegian company, to identify SNPs that could enhance cattle's resistance to mastitis, an infection of the mammary glands.

Meanwhile, several publicly funded programmes are under way with the goals of eradicating scrapie (a sheep disease similar to bovine spongiform encephalopathy, better known as mad-cow disease), and of producing cattle that are resistant to Johnes disease, a fatal bacterial infection of the small intestine. The logical next step, having once bred a cow or sheep that has been optimised for a desired characteristic, would be to reproduce the result by cloning it. But cloning mammals has proved difficult, and even if it could be done routinely, it might not go down well with the average shopper. Using SNPs to keep animals breeding true, however, could not possibly offend anybody. Could it?

## US consumer poll on GM crops

BIO Food & Ag Weekly E-Newsletter. 5-9 Jul 04.

Harris Survey on Consumer Attitudes: A Harris Interactive Poll published last week has found that consumer acceptance of biotech crops is on the rise since the poll was last conducted in 2000. The poll results show 71% of the public believes that biotech crops will enable an increase in agricultural production, this is up from 66% in 2000. Fewer people believe biotech foods are "poisonous or will cause disease" - this percentage has decreased by 15% over the last 4 years. The poll also found that the percentage of respondents who believe "biotech crops are seen having more risks than benefits" has dropped by 5% in the last 4 years, and nearly one-fifth of respondents refused to answer this question.

**For more details:** "Gene-Modified Foods, Crops Seen Having More Risks than Benefits," [The Wall Street Journal](#), 2 Jul 04

## Plant enzyme function changes with cell location

Crop BiotechNet, 9 Jul 04

The location of a plant enzyme within the cell can change its functions instantaneously. This was the finding of scientists at the US Department of Energy's Brookhaven National Laboratory who noted that it was the first example of location-dependent production of alternate products by single enzymes. Researcher John Shanklin said that multifunctional enzymes could substantially expand the diversity of metabolic products available to a cell, thus increasing the organism's ability to adapt to changing conditions. The finding also provide new ways to tailor plant products to meet specific needs, such as growing crop plants that make different and perhaps healthier oils.

The full paper is published in the 13 Jul 04 issue of the Proceedings of the National Academy of Sciences. See a popular article on this research at <http://www.bnl.gov/bnlweb/newsindex.html>.

## Ethiopia drafts agri-biotech documents

Crop Biotech Update. 16 Jul 04.

According to the Ethiopian Ministry of Agriculture and Rural Development (MoARD), a document on agricultural biotechnology has been recently drafted. State Minister Belay Ejigu said the Ministry prepared the document for biotechnology to help bridge the gap in competition by promoting the challenges in agricultural production. The Minister also stated that the government is committed to support and promote biotechnology capacity building endeavours to enable Ethiopia to break out of the vicious circle of poverty.

The State Minister added that the participants of the workshop are expected to identify and appreciate the potentials and limitations of agricultural biotechnology development of the country in order to assess and enrich the draft document. Experts in the sector are required to formulate priority interventions and potential research and development projects based on the existing realities of the country.

Belay added that the adoption of this technology obviously lies with the national research and extension system. The workshop discussed, among others, biotechnology policies and strategy of Ethiopia, biosafety regime for the development of biotechnologies, the role of higher learning institutions for capacity building in agricultural biotechnology, and how to share experiences on agricultural biotech research and development. / Kenya Biotechnology Information Centre.

## Meetings

**3 - 5 Aug 04: EPA Symposium on the Development of Strategic Programmes for Monitoring Ecological Impact from Plant-Incorporated Protectants (PIPS)** (From AgBioView 6 Jul 04); Sheraton Hotel in Crystal City, 1800 Jefferson Davis Highway, Arlington, VA 22202; A limited number of rooms will be available at the Sheraton Hotel through 3 Jul 04, for the special meeting rate of \$150 per night. 703-769-3946..

<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=84389>

Please preregister by **30 Jul 04**. You may register by e-mail by contacting Holly Stoddard at [hstoddard@tnainc.com](mailto:hstoddard@tnainc.com) or by calling (678) 355-5550. On site registration will be accepted on a space available basis. For symposium information, registration, and logistics, contact Holly Stoddard; For further information, the EPA contact is Dr. Robert Frederick, telephone: (202) 564-3207; e-mail: [frederick.bob@epa.gov](mailto:frederick.bob@epa.gov)

**26-30 Sep 04: 8th International Symposium on the Biosafety of Genetically Modified Organisms (ISBGMO)**; Montpellier, France. Complete article:

pdf: <http://www.isb.vt.edu/news/2004/artspdf/jul0405.pdf>

web: <http://www.isb.vt.edu/news/2004/news04.jul.html#jul0405>

**16-18 Nov 04: Hi Europe and Food Safety & Hygiene 2004**; RAI, Amsterdam, The Netherlands; <http://www.FoodNavigator.com/pubNL.asp?id=lawbdznaqh>