CROP BIOTECH UPDATE

A weekly summary of world developments in agri-biotech for developing countries, produced by the Global Knowledge Center on Crop Biotechnology, International Service for the Acquisition of Agri-biotech Applications
SEAsiaCenter (ISAAA), and AgBiotechNet

December 3, 2004

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CO-EXISTENCE OF GM AND NON-GM MAIZE CROPS OK, SAYS UK REPORT

Genetically modified (GM) and non GM maize crops can co-exist without any problem, says a report from PG Economics Ltd., a United Kingdom-based agriculture and rural development consultancy group. Graham Brookes, one of the report authors, said that "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 meters separation distance between crops. This contrasts with impractical and disproportionate maize co-existence rules being put forward in some member states."

The report entitled "Genetically Modified Maize – Pollen Movement and Crop Co-existence" presented the following key findings:

* 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 labeling legislation can be achieved.

* The probability of GM adventitious presence being found in a non GM maize crop (grown in close proximity) is reduced further by applying additional specific co-existence measures in isolation or in combination

* 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 meters is also effective. Application of a greater separation distance (e.g. 10-12 meters 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.

See the full report online at http://www.pgeconomics.co.uk/co-existence_not_problem.htm

PEW REPORT NOTES DIVERSITY IN MANAGING AG BIOTECH

There are broad differences on how States collaborate with federal regulators to oversee agricultural biotechnology and address unique technology issues. This was the view of a report released by the Pew Initiative on Food and Biotechnology

The report on “Tending the Fields: State and Federal Roles In the Oversight of Genetically Modified Crops” provided a national overview of the federal-state relationship in the oversight of genetically modified crops. A few insights by Michael R. Taylor and colleagues of Resources for the Future were the following:

* Most officials and stakeholders at the state level believe state regulation of biotechnology should address local concerns whereas primary responsibility for human health and environmental protection should rest with federal regulators.

* The definition of "local concerns" regarding biotech differs from state to state. States with large agricultural sectors are intensely interested in the economic promise of agricultural biotechnology, but also need to consider concerns that new GM crops could threaten valuable export markets for existing producers of conventional or organic crops.

* There is broad sentiment that many states do not have the legal tools, technical expertise and financial resources needed to effectively partner with federal regulators and carry out the necessary level of oversight.

To read the full report, see http://pewagbiotech.org/research/fields/

To read the activity in key states, see http://pewagbiotech.org/research/fields/data.php

STUDY: GM CROPS POSE NO THEAT TO WILDLIFE

A new study recently released in Britain showed that GM crops do not pose harm to the environment. Known as the Bright study, the four-year experiment conducted by the National Institute for Agricultural Botany, focused on herbicide tolerant sugar beet and winter oilseed rape. Bright stands for Botanical and Rotational Implications of Genetically Modified Herbicide Tolerance.

The study found that these herbicide tolerant crops, which were used in rotation, showed no evidence in reduction of weed seeds which provide food for insects and native birds. In addition, the study also showed potential benefits of herbicide tolerant GM crops in terms of reduced use of chemicals.

The research was sponsored by the Scottish Executive Environment and Rural Affairs Department, the Department for the Environment, Food and Rural Affairs and industry partners, and coordinated by Dr. Jeremy Sweet of the National Institute for Agricultural Botany.

"Our research indicated there was no long-term difference in weed population in fields using GM and non-GM crops. Growing herbicide-tolerant crops could provide farmers with the flexibility to improve plant diversity by only controlling weeds when they are competing with the crop", says Dr. Sweet.

For full article about the news, visit
http://news.scotsman.com/international.cfm?id=1373122004

EU REQUESTS MEMBER STATES TO LIFT GM BANS

The EU Commission will ask five EU Member States to lift their bans on certain EU approved GM products during the Regulatory Committee meeting in Brussels. Austria, France, Germany, Greece, and Luxembourg have national bans on 5 EU-approved biotech crops. EuropaBio, the European Association for Bio-industries, reports that these bans were imposed using the safeguard clause of Directive 90/220 that permits such bans if there are real safety concerns. It indicates however, that new scientific information must be provided to support such bans.

In July 2004, the European Food Safety Authority reinforced earlier opinions by the European Commission's Scientific Committee and confirmed that these various national bans were not scientifically justified. Hence, the Commission is upholding EU law by requesting these countries to withdraw their bans.

For a complete list of countries and products concerned, see http://europa.eu.int/rapid/pressReleasesAction.do?

For more information, email EuropaBio's Simon Barber or Adeline Farrelly at s.barber@europabio.org and a.farrelly@europabio.org, respectively.

GM CLOVER NO MORE A WEED THREAT THAN CONVENTIONAL CLOVER

A Commonwealth Scientific and Industrial Research Organization (CSIRO) Plant Industry study shows that genetically modified (GM) subterranean clover is no more a weed threat than its conventional counterpart. "Our field and glasshouse trials provided no evidence that the invasiveness and competitiveness of GM sub-clover was any greater than conventional sub-clover, indeed at higher densities GM sub-clover performs less well," says Bob Godfree of CSIRO.

The study which is part of a bigger initiative to understand GM organisms, looked at the clover as a potential weed in native grasslands. The researchers noted that GM sub-clover seed tended to be less dormant so that more seeds were released from the seed bank and could germinate every year. Overall, however, "GM sub-clover populations would decline over times and in pastures both GM and non-GM sub-clover might persist," added Godfree.

See the CSIRO release at http://www.csiro.au/page.asp?type=mediaRelease&id=GMsubclover

FOOD INDUSTRY'S ROLE STRESSED IN INDONESIA CONFERENCE

"The new role of the food industry is to prolong life by promoting better nutrition... and fulfilling consumers' needs through biotechnology," Dr. Sri Nasar of the University of Indonesia School of Medicine said, in his plenary lecture "Pediatric Nutrition: Past and Present," during the 2nd Asian Conference of Pediatric Nutrition (ACPN) in Jakarta, Indonesia.

Nasar recounted the history of nutritional science, from Hippocrates' "innate heat" theory to the molecular and genomics era of today. The next step, he said, is nutrigenomics, where the interaction of micronutrients with the genome and protein expression are studied.

With limited food supplies, Nasar stated, pediatrics needs to focus more on studies on nutrition and metabolism. Studies, moreover, should also focus on the effect of the environment on the genome, which may influence lifetime health.

Visit the ACPN at http://www.acpn2004.com

KOREA TO INTRODUCE GM TEST SYSTEM

The Korean Food and Drug Administration (KFDA) will establish a standardized test system for genetically modified (GM) products. This system will complete the management and tracing system in the country to ensure more reliable and safe GM product testing.

Bae Keun-min of the Korea Times, reports that he test standard was prepared based on the guidelines of the Association of Official Analytical Chemistry and modified to consider the local situation. Both South Korean and Japanese governments have verified the plan.

Public opinion will be sought in the next 20 days after which it will be reviewed by the regulation council for adjustments. The KFDA will implement the test standard between January to February 2005.

About 26 types of GM agricultural produce, including corn, beans and rape for oil production, have grants to be sold in Korea while GM potato is waiting sales approval.

Contact Bae Keun-min at kenbae@koreatimes.co.kr or see the article at http://times.hankooki.com/lpage/nation/200411/kt2004112918012411960.htm

MULTIPLE VIEWPOINTS ON GM FOODS

Public debate in Europe shows that rigorous assessments are necessary but not enough to gain social acceptance of agricultural biotechnology. Hence, the challenge is to identify prerequisites to introduce agri-biotech products in a manner that is broadly accepted in societies with various viewpoints. So says, ENTRANSFOOD, a European Commission-

sponsored consortium. Taking the viewpoints of representatives from various sectors of society, ENTRANSFOOD, concluded that:

* Uncertainties related to GM foods are similar to the questions raised with regards health impact of other plant-derived foods. New molecular tools will help scientists better understand potential health impacts of all foods consumed.

* Assessments of gene transfer should compare the risk of transfer of modified genes from GM crops to microbes or human cells to the risk of a similar event occurring in nature. The risk assessment should focus on two factors: first, on the function of the transferred DNA in the recipient cell; and on whether the recipient cell may have acquired the same gene from a source other than the GM crop.

* Consumer trust is key and social scientists in the consortium highlighted that process-based labeling of all foods containing GM crops is one prerequisite to allay the fears of EU citizens. There was agreement, however, that there are difficulties in implementing the EU's labeling requirements.

For more information on ENTRANSFOOD's discussion on combining multiple viewpoints on GM foods, visit http://www.eufic.org/gb/food/pag/food45/food454.htm.

STRAWBERRIES GET SCIENTIFIC TREATMENT

Fruit flavor is essential to its selling power, and the compounds affecting such factors in strawberry were explored by Asaph Aharoni and colleagues, of Plant Research International in the Netherlands, in the paper "Gain and Loss of Fruit Flavor Compounds Produced by Wild and Cultivated Strawberry Species," available in this month's The Plant Cell.

The molecular mechanisms by which fruit flavor and aroma compounds are gained and lost during evolution and domestication are largely unknown. In the latest research, however, scientists found that wild and cultivated strawberries differ by very little at the genetic level, even as whole compounds are unique to either variety. Wild varieties contain olefinic monoterpenes and myrtenyl acetate, while cultivated strawberries contain the monoterpene linalool and the sesquiterpene nerolidol.

A gene, named FaNES1, is responsible for the difference, and its protein product is found exclusively in the fruit of cultivated strawberry varieties. Although the gene is present in either variety, it is mutated in the wild variety, hence accounting for the difference in their flavors.

The study also sheds light on the molecular differences between wild and cultivated varieties of other soft fruits, especially those which contain terpenes, including some

citrus species and the mango. The study may also be used to improve current fruit species and perhaps even strengthen their hold on the market.

Download the full article at http://www.plantcell.org/cgi/reprint/16/11/3110

PLANT-BASED DIET ALSO ENHANCES RECOVERY FROM SHIGELLOSIS

A "Plant-Based High Protein Diet is Comparable to An Animal Based Diet with Respect to Nitrogen Absorption and Nitrogen Balance in Malnourished Children Recovering from Shigellosis," Dr. Iqbal Hossain of the International Center for Diarrheal Disease Research (ICDDR) in Bangladesh said as he presented his findings at the 2nd Asian Conference on Pediatric Nutrition (ACPN) in Jakarta, Indonesia.

Three diets were set up for recovering patients, namely a Plant Based High Protein Diet (composed primarily of legumes), an Animal Based Diet, and a Low Protein Diet. With metabolic data -- nitrogen levels, fat, energy -- derived from urinalysis and fecalysis, Hossain and his colleagues found that nitrogen absorption was the same for either the plant-based high protein diet and the animal-based diet.

A meat or animal-based diet has always been used for children recovering from shigellosis to induce protein absorption and catch up growth. The diet, however, is expensive, and a plant-based high-protein diet is cheaper in comparison ($0.15 versus $0.75 per serving), making it ideal for nutritional rehabilitation in low-income countries.

Visit the ACPN at http://www.acpn2004.com

INDONESIAN FARMERS AGREE TO ADOPT MODERN BIOTECH

Farmers in Indonesia voiced out the need for freedom of choice in deciding what crops to plant. Specifically, they asked government to allow the use of seeds derived from biotechnology. They also agreed to form farmer networks in the various regions and encourage greater participation with various public and private sectors.

These points were agreed upon during the Asian Farmers Regional Network (ASFARNET) workshop “Technology Promotion and Exchange on Agricultural Biotechnology” held at Hotel Salak, Bogor, Indonesia from November 28 to December 1, 2004. A total of 50 farmers, led by Agusdin Pulungan, ASFARNET’s Coordinator in Indonesia, attended the workshop and framed the resolution calling for greater use of agri-biotechnology applications. They came from six provinces of Indonesia – Lampung, Central Java, East Java, West Java, South Sulawesi, and West Sumatera.

The farmers attended lectures of experts from different fields who shared their views about modern biotechnology and also had the opportunity to visit biotech laboratories in Bogor. Farmers from the Philippines shared their experiences in adopting Bt corn and the benefits of establishing a farmers' network.

ASFARNET was established in December 2003 to promote the active exchange of experiences and knowledge on alternative modern farming technologies. It also engages in activities that will ensure responsible farming, accelerate transfer of appropriate modern technology, and ensure community participation in these activities.

For more information about the recent ASFARNET workshop, email Agusdin Pulungan, ASFARNET Coordinator, at augustpu@msn.com. A copy of the farmer's resolution can be downloaded at http://www.isaaa.org/kc.

CBT NEWS FEATURE: Dr. Norman E. Borlaug

Norman Ernest Borlaug, known as the father of "modern agriculture" and the father of the "green revolution", was born in 25 March 1914 in a small farm near Cresco in Iowa. He studied at the University of Minnesota, where he earned his B.S. in forestry (1937), M.S. in forest pathology (1939) and Ph.D. in plant pathology and genetics (1942).

From 1942 to 1944, he was a microbiologist on the staff of the du Pont de Nemours Foundation in Delaware where he worked on industrial and agricultural bactericides, fungicides, and preservatives.

In 1944, Dr. Borlaug joined the Rockefeller Foundation cooperative project with the Mexican Ministry of Agriculture as head of the wheat research and improvement program.

When the Rockefeller and Ford Foundations, in cooperation with the Government of Mexico, established the International Maize and Wheat Improvement Center (CIMMYT) at El Batan near Mexico City, Dr. Borlaug was made director of its International Wheat Improvement Program. Borlaug and his staff in Mexico spent nearly 20 years breeding the high-yield dwarf wheat varieties. These new varieties resisted a wide spectrum of plant pests and diseases, and produced two to three times more grain than the traditional varieties. In 1965, they started a massive campaign to ship the miracle wheat to Pakistan and India and teach local farmers how to cultivate it properly. By 1968, the U.S. Agency for International Development had already hailed Borlaug's achievement as a "Green Revolution."

In Pakistan, wheat yields rose from 4.6 million tons in 1965 to 8.4 million in 1970. In India, they rose from 12.3 million tons to 20 million. And the yields continue to increase.

Soon after Borlaug's success with wheat, his colleagues at the Consultative Group on International Agricultural Research developed high-yield rice varieties that quickly spread the Green Revolution through most of Asia. This revolution made it possible to improve living conditions for hundreds of millions of people living in the developing countries. Since then, Dr. Borlaug has continued working tirelessly in saving millions from starvation and suffering.

He has been honored by numerous institutions in the United States, Pakistan, India, Norway, Canada and many other countries. He serves on many boards and advises governments in the developing world on food production.

Dr. Borlaug's highest honor, the Nobel Prize for Peace, was awarded to him in 1970 for his untiring efforts to save the hungry of the world. He later was instrumental in the establishment of the World Food Prizes, an international award recognizing the achievements of individuals who have advanced human development by improving the quality, quantity or availability of food in the world.

Dr. Borlaug still works to get modern agricultural technology into the hands of hungry farmers in the developing world. Today, he is a consultant to the International Maize and Wheat Center in Mexico, and President of the Sasakawa Africa Association, a private Japanese foundation working to spread the Green Revolution to sub-Saharan Africa.

He is also one of the patrons of the International Service for the Acquisition of Agri-Biotech Applications.

"If you desire peace, cultivate justice, but at the same time cultivate the fields to produce more bread; otherwise there will be no peace."

-- Norman E. Borlaug, Oslo, Norway, December 11, 1970

http://nobelprize.org/peace/laureates/1970/borlaug-bio.html
http://www.ideachannel.com/Borlaug.htm

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