CropBiotech Update

INTERNATIONAL SERVICE FOR THE ACQUISITION OF AGRI-BIOTECH APPLICATIONS

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).

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News

GLOBAL

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CONGRESSIONAL GOLD MEDAL AWARDEE DR. NORMAN BORLAUG ON BIOTECH

World Food Prize Founder and 1970 Nobel Peace Prize Laureate Dr. Norman Borlaug was awarded the Congressional Gold Medal, America's highest civilian honor by US President George W. Bush and Speaker of the House Nancy Pelosi last July 17, 2007.

In his speech, Borlaug stressed the importance and benefits of the advances in biotechnology over the last decade. He also encouraged new initiatives in biotechnology to focus on biofuels; on crops and traits of greatest interest to the world's poor, such as beans, peanuts, tropical roots, tubers like cassava and yams, and bananas; and on research to enhance the nutritional content of food crops for essential minerals and vitamins.

Borlaug stressed the importance of public-private partnerships to improve access to biotech seeds by smallholder farmers, and to share research and development costs for "pro-poor" biotechnology.

For details see press release at: http://online.wsj.com/public/search/page/3_0466.html?KEYWORDS=Borlaug.

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AGRICOLA MEDAL AWARDED TO TURKISH PRIME MINISTER

The Food and Agriculture Organization's (FAO) highest award, the Agricola Medal, has been conferred on Turkish Prime Minister Recep Tayyip Erdogan in recognition of his contributions to agricultural and social development in Turkey. Under Prime Minister Erdogan, Turkey launched a major Agricultural Reform Project which aimed to provide direct incentives to farmers to significantly increase production and exports and raise rural incomes and food security.

The awarding was done during the inauguration of FAO Sub-regional Office for Central Asia in Ankara. The Office offers advice on agricultural policy and technical expertise to seven countries – Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Turkey and Uzbekistan.

To read more: http://www.fao.org/newsroom/en/news/2007/1000626/index.html.

AFRICA

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KENYA TO HOST AFRICA'S NEWEST AGRICULTURE BODY

The Alliance for Green Revolution in Africa (AGRA) will have its headquarters in Nairobi, Kenya, said the new Chairman of the Board, former UN Secretary-General Kofi Annan after a meeting with the country's President Mwai Kibaki.

Annan said the Alliance will work with African governments, the private sector and development agencies to help break the cycles of hunger and poverty in Africa through a comprehensive set of initiatives that will provide small-scale farmers with the tools and opportunities they need to boost their productivity, increase their incomes, and build better lives.

In addition, Annan told the press in Nairobi after a fact-finding mission in Kenya that saw him meet face-to-face with small-scale farmers, that the new agricultural initiative will be involved in Africa programs aimed at developing better and more appropriate seeds; fortifying depleted soils with responsible use of soil nutrients and better management practices; improving access to water and water-use efficiency; improving income opportunities through better agricultural input and output markets; developing local networks of agricultural education; understanding and sharing the wealth of African farmer knowledge; encouraging government policies that support small-scale farmers; and monitoring and evaluating to ensure that Alliance efforts improve the lives of small-scale farm households and help build a sustainable future for all Africans.

AGRA is an initiative of the Rockefeller Foundation and the Bill and Melinda Gates Foundation. The Bill and Melinda Gates foundation has donated $150 million to start off the new initiative.

For more information about AGRA visit http://www.agra-alliance.org.

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KENYAN MPS BACK CALL TO ENACT BIOSAFETY LAW

Fifteen Kenyan parliamentarians belonging to various Parliamentary Select Committees such as education, science and technology, health, trade, agriculture, environment and natural resources have called for speedy enactment of Biosafety Bill 2007 into law, to give legal backing for biotechnology research and development activities that are on-going in the country.

Speaking during a fact-finding mission to assess the country's human and technical capacities to undertake biotech research, the MPs urged the Minister for Science and Technology, Dr Noah Wekesa, to table the Bill in Parliament as soon as possible so that it could be debated and passed into law to enable scientist to harness the "immense potential of biotechnology to improve agricultural productivity and industrial development".

"When the Bill comes to Parliament, we will lobby for its enactment into law," said Sammy Weya, MP for Alego Usonga Constituency, a cotton growing area. The seeing-is-believing tour, which included a visit to Bt Cotton (Bollgard II) contained field trials site at the Kenya Agricultural Research Institute in Mwea Station, about 150 km north east of the Capital Nairobi, was also attended by government officials, scientists, regulators, farmers, seed traders and the media.

For more information contact Daniel Otunge of the East and Central Africa Biotechnology Information Center at d.otunge@cgiar.org.

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IFAD-SUPPORTED HORTICULTURE PROGRAM TO BOOST INCOMES AND JOBS TO RURAL KENYA

A multi-million dollar program supported by the International Fund for Agricultural Development (IFAD) will boost incomes and improve health and quality of life for poor rural people in Kenya. The Smallholder Horticulture Marketing Programme will help farmers improve crop quality and yields and find the most cost-effective ways to get produce to the market. It will also encourage growers to add value to crops by transforming them into a range of products such as purées, dried fruits and conserves.

The program will focus on potatoes, bananas, cabbage, kale, tomatoes and other crops grown mainly by the poor. It will concentrate on produce sold in the domestic market rather than the export market. "If we can identify the inefficiencies in the marketing chain between the time a crop is grown and the time it reaches the consumer, we can address them," said IFAD's President Lennart Båge. "This should translate into more dollars in farmers' pockets."

Read the press release at http://www.ifad.org/media/press/2007/34.htm.

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STATUS OF AGRI-BIOTECH IN SOUTH AFRICA

According to the US Department of Agriculture Foreign Agricultural Service (FAS), farmers in South Africa continue to plant genetically modified (GM) crops. About 92% of cotton, 44% of corn, and 59% of soybeans planted in South Africa are GM. South African farmers prefer GM crops because these varieties require fewer inputs and have higher yields, and are easier to manage than traditional varieties.

The South African government generally supports biotechnology, and the country has a regulatory structure that is very progressive. South Africa is expected to play a vital role like countries in Africa develop biotechnology policies.

Read the full report at http://www.fas.usda.gov/gainfiles/200707/146291657.pdf.

AMERICAS

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USDA RELEASES DRAFT ENVIRONMENTAL IMPACT STATEMENT

The United States Department of Agriculture has issued a draft of the Environmental Impact Statement, which is a requirement in revising its agricultural biotechnology regulations. Some of the regulation changes that are being considered include the following:

- Expanding regulatory oversight to biological control organisms and genetically engineered (GE) organisms that have the potential to be noxious weeds
- Expanding the tiered permitting system based on potential risk and familiarity with the GE organism
- Providing an alternative process to deregulation that will include conditional approvals
- Revising the permitting system for PMPs and PMIPs for multi-years with intensive reviews of standard operating procedures, audits, and inspections
- Building on its current AP policy, revising regulations for determining the safety of the low-level presence of regulated GE products
- Establishing a regulatory mechanism for imports of commodities that are not for propagative use

Subscribers to BIO AG Weekly may read more on this news at agweekly@bio.org.

DUPONT TO OPEN NEW SOYBEAN RESEARCH CENTER IN KANSAS

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DuPont's Pioneer Hi-Bred business will open a new soybean research center in Lawrence, Kansas. The new research center will play a vital role in developing and commercializing new varieties to meet the needs of farmers in Kansas, southeast Nebraska and western Missouri. These include varieties with tolerance to drought, soybean cyst nematode, charcoal rot, stem borer, sudden death syndrome, Phytophthora root rot and other insect and disease protection traits. "The research center's breeding program will be rapidly integrating these traits into elite Pioneer germplasm," said Dennis Byron, Pioneer vice president of crop product development.

The expansion is part of a global effort by DuPont to reinvest $100 million into its seed business to strengthen and drive commercialization of its pipeline of new products.

Read the press release at http://www.pioneer.com/web/site/portal/menuitem.57cf4458970e5bab94ab2095d10093a0/.

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DOW AGROSCIENCES, SANGAMO BIOSCIENCES ANNOUNCE NEW MILESTONE IN CROPS DEVELOPMENT

Dow AgroSciences LLC and Sangamo BioSciences, Inc. have announced the successful application of Sangamo's zinc

finger DNA-binding protein (ZFP) technology to the generation of specific traits in two major crop species - maize and canola. “Our ZFP technology can be used to specifically regulate and modify genes,” said Philip Gregory, D. Phil., Sangamo’s vice president of research. “This technology has the unique advantage of generating the desired trait outcomes without needing to be permanently present in the modified cells.

Readers can access the complete news article at http://www.dowagro.com/newsroom/corporatenews/2007/20070619a.htm.

GM POTATOES BANNED FROM POTATO HOMELAND

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The government of Cusco, a region in the Peruvian Andes, has decided to ban all genetically modified (GM) varieties of potato. The area was the birthplace of many varieties of spud, and is still home to thousands of kinds of potato, from the notoriously hard to peel *q'achun waq'achi* to the dark grey *amakjaya*.

The move was supported by a Peruvian non-profit organization called Association ANDES, along with the International Institute for Environment and Development (IIED). The motivation is both to ensure that genes from GM potatoes do not infiltrate the native potatoes, and to support efforts to market the area as a source of diverse, authentic, organic potato varieties.

But some note that there are ways of allaying fears about the accidental spread of GM potatoes. Creating types without viable seeds can prevent genetic dispersal. Spuds can be grown asexually by planting the sprouts, or 'eyes', from last year's crop.

Readers can access the full article at http://www.nature.com/news/2007/070716/full/070716-5.html.

ASIA AND THE PACIFIC

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INDIA STUDIES SHOW BENEFITS OF BT COTTON

The Associated Chambers of Commerce and Industry of India (ASSOCHAM) reports that two studies on Bt cotton farming in India prove that farmers benefited from planting Bt cotton. The socio-economic appraisal of Bt cotton cultivation in India was undertaken by Indicus Analytics while the study on economic benefits of Bt cotton cultivation in India was conducted by IMRB International.

ASSOCHAM Immediate Past President, Anil K. Agarwal, said that both studies established the significant socio-economic benefits that have accrued to cotton farmers as a result of the introduction of this technology. Farmers planting Bt cotton had higher incomes than non-Bt farmers, earning a net profit of 162% more per acre. They also had higher yields of approximately 50% over conventional cotton harvests. The number of sprays against bollworms was also reduced by about five sprays less per acre.

Bt cotton farming households fared economically better than non-Bt cotton farming households, and had better access to markets, shops, banking and telecommunication facilities; as well as maternal services, education, and health services.

For more information email Bhagirath Choudhary of ISAAA South Asia Office at b.choudhary@cgiar.org.

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INDO ECONOMIST BATS FOR BIOTECH

Former Indonesian Minister of Economic Affairs and economist, Bustanul Arifin, called on the government to urgently promote biotechnology to ensure food security and improve the lives of farmers. Arifin, speaking in a seminar organized by the Indonesian Biotechnology Information Center, said that Indonesia needs a technology breakthrough like biotechnology to improve food production, especially rice, maize, sugarcane, and soybean.

During the same seminar, Graham Brookes, director of the United Kingdom.-based biotechnology consultancy firm, PG Economics Limited, highlighted the global impact of biotech crops, particularly with regards to their economical and environmental effects in the first ten years of commercial use.

For more information, email Dr. Bambang Purwantara at b.purwantara@biotrop.org or Dewi Suryani at dewisuryani@biotrop.org, or visit http://www.antara.co.id/arc/2007/7/17/pemerintah-tak-serius-kembangkan-rekayasa-genetika/ for the article in Bahasa.

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ANIMAL HEALTH CODE NEEDED, SAY PHILIPPINE SCIENTISTS

The National Academy of Science and Technology (NAST) of the Philippines is batting for a congressional enactment of an Animal Health Code. The academy believes that the code would lay the "national policy and provide guidance to national government agencies and local government units towards concerted action in the prevention and control of animal diseases". The scientists observe that current regulatory issuances are insufficient to enforce the needed prevention and control measures. This was one of the resolutions pronounced during the two-day 29th Annual Scientific Meeting of the NAST, which concluded on July 12, 2007.

The NAST Annual Scientific Meeting, a multi-disciplinary assembly of scientists and the academe, convened with the theme "Building a Culture of Science in the Philippines".

For details of the conference write to nast@secretariat.dost.gov.ph and spt@agri.searca.org

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APPROVAL OF A BIOSAFETY FRAMEWORK IN VIETNAM

On July 11, 2007, Vietnam's Prime Minister Nguyen Tan Dzung approved Decision No. 102/2007/QD-TT, a comprehensive strategy to strengthen management capacity for the biosafety of genetically modified organisms (GMOs), including goods and products originating from them. This approval also covers the implementation of the Cartagena Protocol of Biosafety until 2010. The document recognizes that the management and prevention of potential risks, needed to protect human health and the environment, is an integral part of research and development of modern biotechnology.

The plan targets various aspects concerning biosafety such as setting up, issuing and completing legal and regulatory framework on biosafety; promoting management capacity in biosafety from centre to local; setting up of national information systems of biosafety; capacity building in biosafety research and analysis; raising public awareness; and information sharing and public participation in biosafety management.

For further details contact Hien Le at hienttm@yahoo.com.

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US, VIETNAMESE SCIENTISTS AIM NEW STAGE IN COOPERATION

A five-year scientific cooperation plan between Vietnam and the US Committee for Scientific Cooperation extends the already existing collaboration. Chairwoman of the US Committee Prof. Judith Ladinsky and the Deputy Minister of Science and Technology Le Dinh Tien in their meeting in Hanoi on July 9 discussed the terms of the new collaboration and the ways to further broaden the existing scientific associations between the two countries.

Scientific agencies of the two countries have already collaborated in healthcare, science and technology, agriculture and social sciences, and have agreed to continue with this cooperation. Future cooperation will focus on the transfer of technologies in the fields of biotechnology, nanotechnology, skin grafting and the production of drugs to combat cancer.

According to Deputy Minister Tien, a Memorandum of Understanding on this extension will be signed by the two countries in December this year. The cooperation plan will run from 2008 to 2012.

For further details contact Hien Le at hienttm@yahoo.com.

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TOWARDS THE DEVELOPMENT OF SALT-TOLERANT WHEAT

Scientists at the Australian Commonwealth Scientific and Research Organization (CSIRO) are challenged to develop salt-tolerant wheat varieties that can withstand the saline conditions of Australia's vast dryland cropping belt. The scientists have discovered two genes, known as *Nax1* and *Nax2*, that exclude salt from different parts of the plant – one from the roots, the other from the leaves. The two genes originated from Einkorn (*Triticum monococcum*), a Persian ancestor of wheat, and are not normally present in modern wheat varieties. However, they were unintentionally bred into a durum wheat line about 35 years ago during a stem rust research project. Initial paddock trials showed that the varieties containing the "ancient wheat genes" had improved tolerance to salt, but were not as productive as other durum varieties. CSIRO researchers have overcome this problem and the latest varieties now perform well both in yield and salt-tolerance.

Read the complete article at http://www.csiro.au/files/files/pf9k.pdf.

EUROPE

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BAYER CROPSCIENCE' NUNHEMS ACQUIRES KOREAN SEED COMPANY

Bayer CropScience vegetable seed business, Nunhems, has completed the acquisition of the South Korean vegetable seed company SeedEx which specializes in the breeding, production and marketing of hot pepper and Brassica varieties. Both crops belong to the most important vegetable crops in Asia in terms of acreage and consumption.

Mr. Douwe Zijp, Chief Executive Officer of Nunhems comments: "The acquisition of SeedEx is an important step to strengthen our market position in Hot Pepper and Brassica in Asia. The SeedEx team with its well recognized

breeding competence and market know-how will be an excellent reinforcement of our global teams."

To read more, visit http://www.bayercropscience.com/bayer/cropscience/cscms.nsf/id/20070713?open&ccm=400.

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GREECE EXTENDS BAN ON GM MAIZE

A month after European Union Trade Commissioner, Peter Mandelson, warned Member States of a possible legal action from the World Trade Organization against the bloc due to individual bans on biotech food, Greece again has decided to extend a ban on genetically modified maize MON810 for at least two more years, despite approvals for commercialization in the EU. The country also increased the varieties barred from sale and cultivation from 31 to 51, all of which are derived from the MON810 seed type, developed by Monsanto. The Ministry of Agriculture strongly opposes the circulation of genetically modified organisms.

Greece has justified its decision and stated that its actions are well-advised. A declaration from the Ministry of Agriculture commented that the new ban "is founded on the same solid scientific and legal basis, but also includes new scientific data and finds. These concern a possible threat to human health as well as to the beekeeping industry."

Read the news article at http://www.coextra.eu/country_reports/news878.html.

Research

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PRODUCING MARKER-FREE SITE-SPECIFIC TRANSGENIC PLANTS

Japanese researchers have demonstrated a method for producing marker-free site-specific transgenic plants, the first time that the concept has been shown to be feasible. Removing the selectable markers in transgenic plants will be beneficial as these sometimes cause concern and fear among consumers, as often these markers are genes conferring resistance to antibiotics. The site-specific integration would also counter the drawbacks of lack of specificity, and the associated problems such as variability and instability of transgenes.

For more information, the paper can be accessed by journal subscribers at http://www.springerlink.com/content/050441527233w84v/.

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NEW BREEDING TECHNOLOGIES: A GOOD INVESTMENT OR NOT?

Many technologies are available to breeders to help them improve the efficiency of their selection programs. Among the newer technologies are marker assisted selection, genomics, and physiological selection. But does the investment on these technologies pay off in the end? Researchers John Brennan and Peter Martin at the Australian Wagga Wagga Agricultural Institute say it does.

Brennan and Martin presented comparative economic analyses between conventional breeding and that which uses new technologies in their paper published in Euphytica. They presented cases where the use of new technologies can

help increase the returns on investment in breeding programs by reducing associated costs during varietal development, such as labor cost or direct inputs.

The researchers cited the potential benefits that breeding programs can gain from molecular markers as well as from adopting an indirect selection system using physiological indices. An economic assessment of phenotypic evaluation versus the use of molecular markers showed that the latter can offer lower costs especially under high-throughput systems. Their estimates on the cost of line evaluation range from $8 to $16 when using molecular markers and $2 to $163 when phenotypic evaluation is employed.

For more information, the paper can be accessed by subscribers at http://www.springerlink.com/content/x618j83872px7217/.

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PEPPER GENE CONFERS NEMATODE RESISTANCE IN TOMATO

A root-knot nematode resistance gene from hot pepper (*Capsium annuum*) called *CaMi* was found to confer nematode resistance in tomato, the first time that a nematode resistance gene has been introduced in the crop species.

The resistance gene *CaMi* was isolated from pepper line 'PR 205' and its function was confirmed by introducing it into root-knot nematode susceptible tomato plants using *Agrobacterium tumefaciens*-mediated transformation. Over-expression of the gene conferred durable resistance to root-knot nematodes. The Chinese researchers reported that in the transgenic tomato plants, there have been either no or only a few egg-masses on the roots after nematode infection.

Root-knot nematode is one of the major pests of pepper worldwide. Infected plants show symptoms of galls or root knots. These root structures severely affect the water and nutrient uptake in infected plants and may cause yield reduction, stunting and wilting in the crop.

The study published in the journal Plant Cell Reports can be accessed by subscribers at http://www.springerlink.com/content/w5q5614w01293p14/.

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INCREASING CROP CAROTENOIDS BY METABOLIC SINK MANIPULATION

Carotenoids are important for human nutrition and health. This group of compounds is represented by a class of red, orange and yellow pigments found in nature. Plant carotenoids are important precursor of provitamin A.

Many of the major staple crops do not contain adequate amounts of carotenoids. Thus, many researchers are examining how the biosynthetic genes of these compounds can be manipulated. A review paper from Cornell University discusses strategies to develop varieties with the desired levels of carotenoids in different crops.

Li Li and Joyce Van Eck wrote that the creation of a metabolic sink is an important mechanism to control carotenoid accumulation. Metabolic sinksinclude carotenoid sequestering compounds that seize excess carotenoids from the plants biosynthetic pathway thus enhancing the level of carotenoids in storage tissues of food crops. The formation of such compounds in transgenic plants may be a promising strategy for maximally improving the nutritional quality of crops, said the researchers after their work on the *Orange* (*Or*) gene in cauliflower.

The review paper, published in Transgenic Research can be accessed by subscribers at http://www.springerlink.com/content/x24020j2206r3162/.

Announcements

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15TH INTERNATIONAL TRADEFAIR FOR BIOTECHNOLOGY (BIOTECHNICA) Hannover, Germany, 9-11 October, 2007

BIOTECHNICA is regarded as the leading event of the year for the European biotech industry, covering all sectors of biotechnology in depth - from basic biotechnology research, equipment, bioinformatics and services to the five principal areas of application - pharmaceuticals and medicine, industry, nutrition, agriculture and the environment. It also offers exhibitors and visitors a central platform for knowledge transfer. This

For information check their website: http://www.biotechnica.de/profil_e?x=1

EUROBIO 2007, LILLE, FRANCE FROM 26 TO 28 SEPTEMBER 2007

EuroBio 2007 will bring together more than 4,000 biotech professionals, 400 companies, 300 exhibitors and 200 speakers covering Europe's key biotech markets and technologies. Other features include a major trade show with 300 exhibitors and 4000 delegates, a EuroBio Career Fair, and EuroBiopartnering.

For more information: http://www.eurobio-event.com.

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Document Reminders

PUBLICATION ON MARKER-ASSISTED SELECTION IN AGRICULTURE

The FAO Working Group on Biotechnology has just published "Marker-assisted selection: Current status and future perspectives in crops, livestock, forestry and fish", The book is organized into six sections: an introduction to marker-assisted selection (MAS); case studies of MAS in crops (including cassava, common beans, cotton, forage crops, maize, tomato and wheat); case studies of MAS in livestock (including dairy cattle, goats, poultry and sheep); case studies of MAS in forestry (including eucalyptus); case studies of MAS in fish and shellfish; and the final section is devoted to a selection of non-technical issues relevant to applications of MAS in developing countries, such as national research capacities and international partnerships, economic considerations, the impacts of intellectual property rights, and policy considerations.
For more information, visit http://www.fao.org/biotech/news_list.asp?thexpand=1&cat=131.

DOUBLE HELIX PROCEEDINGS AVAILABLE ON-LINE

The e Volume of Proceedings of the Congress "In the Wake of the Double Helix: From the Green Revolution to the Gene Revolution" are now available at http://www.dista.agrsci.unibo.it/doublehelix/proceedings/ The volume includes sections on the Green Revolution, biodiversity and germplasm, genes and crop improvement, genetic

engineering, and plant biotechnology and society.