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Patron

Dr. Imtihan Elahi Qureshi, *T.I.*
Executive Director

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Contributions from readers are welcome on any matter relevant to the mission of COMSATS, namely the promotion of South-South cooperation in science and technology for sustainable progress of the developing countries. The responsibility for the accuracy of any information rests with the original source. Views expressed in this publication do not necessarily reflect those of its editors, publisher or COMSATS.

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From the Executive Director's Desk

Experts have been warning that climate change can lead to extreme weather conditions in the most vulnerable parts of the world. The unprecedented monsoon floods in Pakistan, land-slides in China and wide-spread fires in Russia during the month of August are most likely a manifestation of global warming. The worst floods in Pakistan's history have devastated the lives of over 20 million people, inundating 1/5th of the entire country. The loss of property, standing crops, food-storage sites, livestock, clean water resources and infrastructure is horrendous in its magnitude. The UN Secretary-General aptly called it a 'slow Tsunami', since the floods have been wreaking havoc from north of the country to the south over an extending period of more than a month. It is feared that the plight of the people uprooted from their villages and towns will worsen due to lack of clean water and possibility of epidemics. It has been a disaster of a gigantic scale. Sadly, the world community has been slow to realize and respond to this colossal natural calamity.



Worst floods in the history of Pakistan - August 2010

Pakistan has mobilized all its resources, and hundreds of local relief organizations, alongwith international NGOs and UN agencies, are providing food and shelter to the affectees. However, the rehabilitation work will take years to complete and would cost billions of dollars. In this hour of trial, COMSATS appeals to all member States to exhibit South-South solidarity. The expression of sympathy and support would help the traumatized people to re-build their lives.

This is also an appropriate occasion to re-emphasize the core mission of COMSATS, namely, to facilitate the development of technologies that are necessary for sustainable development. Thus, the most important thrust areas of COMSATS are environmental sciences and renewable energy sources. For the collective good of all mankind and to avert catastrophes, such as Pakistan's floods, the countries of the South must cooperate in scientific studies leading to environmental preservation.

In the end, as usual, I will most earnestly request the readers of the Newsletter in Pakistan and abroad to send us their feed-back and comments.

NEWS/ACTIVITIES/HIGHLIGHTS FROM COMSATS SECRETARIAT

COMSATS SECRETARIAT CONTRIBUTING TOWARDS THE FINALIZATION OF THE STRATEGY DOCUMENT

The 13th meeting of COMSATS' Coordinating Council held in Trieste - Italy, in May 2010, had decided that the COMSATS' Strategy Document for the period 2010-14 may be split into two parts. It was suggested that the first part should deal with strategic objectives, whereas the second part may include implementation and procedural matters. This decision was made to facilitate adoption of the strategy by the member States.

Soon after the Council's meeting, the Secretariat started working on the decision. Several consultations were held with Dr. Albert Koers, Interim Director of the InterAcademy Panel, to accomplish this job. The first part of the document, titled 'COMSATS' Strategy (2010-2014) Part-I: Strategic Objectives'; was finalized in the middle of July 2010 and has been sent to the members of the Coordinating Council for their review and approval. So far, feedback has been received from five Centres of Excellence who have given their approval to the document, whereas response from others is expected soon. In order to obtain the views of the members of the Technical Advisory Committee (TAC), the first part of the Strategy Document was also sent to the TAC members informally. A report on the feedback of the Network and TAC members in this regard, will be presented to the Council in its 14th meeting. Efforts to prepare the second part of the Strategy Document have also commenced at the Secretariat. This part of the document will be finalized in the light of the overall response of the members of the Coordinating Council.

EXECUTIVE DIRECTOR COMSATS MEETS THE MALAYSIAN HIGH COMMISSIONER TO PAKISTAN

Executive Director COMSATS, Dr. Imtihan Elahi Qureshi, called on the Malaysian High Commissioner, H. E. Mr. Dato' Ahmad Anwar bin Adnan, in preparation of the former's visit to Kuala Lumpur for attending the 5th Islamic Conference of Ministers of Higher Education and Scientific Research to be organized by the Organization of the Islamic Conference (OIC), Islamic Educational, Scientific and Cultural Organization (ISESCO) and the Ministry of Higher Education, Malaysia. Dr. Qureshi was accompanied by Director General (International Affairs) of COMSATS, Mr. Tajammul Hussain, during the meeting that was held on August 17, 2010.

Apart from matters related to the participation of Executive Director COMSATS in the Islamic Conference, the discussions with the High Commissioner were focused on four agenda-points: Malaysia's membership to the Commission; a Memorandum of Understanding between COMSATS and Solar Energy Research Institute (SERI), UKM, Malaysia; a meeting with the Minister for Science, Technology and Innovation, Government of Malaysia, Datuk

Dr. Maximus Ongkili; and a visit to International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC), Kuala Lumpur, Malaysia.

Dr. Qureshi's visit to Kuala Lumpur is to begin during the third week of October. His visit is expected to establish strong working relations between COMSATS and Malaysian Ministry of Science, Technology and Innovation.

COMSATS' EMPLOYEES LEND A HELPING HAND TO THE FLOOD AFFECTEES OF PAKISTAN

Employees of COMSATS Secretariat and COMSATS Internet Services (CIS) contributed their one-day salary for the flood victims of Pakistan. In addition, COMSATS Secretariat delivered 2,500 kgs of rice to an NGO in Islamabad, Al-Khubaib Foundation. The NGO distributed cooked food among flood victims around Nowshera and Charsadda. CIS also donated a part of its profits for the month of August to the flood victims. CIS Peshawar Office used these donations to make 1,000 packs of dry food that were distributed among the flood victims in different villages around Charsadda.



A vehicle being loaded with eatables for the flood affectees

Also, on August 16, 2010, COMSATS Internet Services (CIS) organized a video conference for UNDP Pakistan to discuss the flood situation and relief efforts in Pakistan with UNDP's office in Vienna.

COMSATS' COLLABORATIVE ACTIVITIES WITH ISESCO AND UNESCO

COMSATS Secretariat is undertaking activities under COMSATS-ISESCO Cooperation Programme 2010-2012. Three activities are being organized in COMSATS' member countries, Syria, Sudan and Senegal, during September and October. These events are being organized in collaboration with COMSATS' Centres of Excellence and other institutions in the member countries, namely Senegalese National Commission for UNESCO and ISESCO, Senegal; Inter

Islamic Network on Information Technology (INIT), Pakistan; CIIT, Pakistan; and HIAST and Damascus University, Syria. New and emerging technologies, such as ICTs, nanotechnology and maintenance of scientific equipment have been chosen as the themes of these events. COMSATS Secretariat has been coordinating with the collaborating institutions to identify some relevant resource persons for the events, as well as provided sponsorship for their participation in these events. Also, ISESCO has provided travel grants and would be providing local hospitality to the participants. Around 300 participants are expected to benefit from these events. More information on these events can be viewed at www.comsats.org.

A proposal for five such collaborative activities in COMSATS' member countries, Bangladesh, China, Sri Lanka and Pakistan, has been submitted to the Pakistan National Commission for UNESCO (PNCU).

COMSATS-TWAS COLLABORATION FOR HIGHLIGHTING COMSATS' CENTRES OF EXCELLENCE

One of the projects being undertaken by the Academy of Sciences for the Developing World (TWAS) is to prepare profiles of prominent R&D institutions in the developing countries, with a view to publicize their accomplishments and assess the prospects of their future developments. Considering the importance of this task, COMSATS showed interest to prepare profiles of its worldwide Network of Centres of Excellence with the assistance of TWAS. The proposal was accepted by TWAS and endorsed during the 13th Coordinating Council Meeting held in Trieste, Italy, in May this year. Separate booklets containing the individual profiles of selected CoEs will be prepared and widely distributed among research centres, universities, government departments and donor agencies.

The decision has been formalized through an agreement. In this regard, a Memorandum of Understanding (MoU) was signed by the Executive Directors of the collaborating organizations. According to the agreement, COMSATS would help identify the most suitable R&D institutions within its Network of Centres of Excellence, whereas TWAS would be responsible for preparing the profiles with the concurrence of these institutions. The printing of the finalized document would be taken up by COMSATS Secretariat as per the agreed quality of printing. COMSATS Secretariat would soon be coordinating with its Network members and TWAS for this collaboration to commence. The aim of this collaboration is to identify the strengths and weaknesses of these institutions in order to put their scientific capacity to a better use in pursuit of COMSATS' mission of promoting South-South and North-South cooperation for sustainable development through applications of Science and Technology.



A session in progress during the International Workshop in China

COMSATS' PARTICIPATION IN INTERNATIONAL TRAINING WORKSHOP IN CHINA

COMSATS encourages capacity building of its employees by facilitating their participation in training workshops, conferences and courses on new trends/technologies to prepare them for future assignments. In this connection, Sr. Assistant Director (Systems) of COMSATS Secretariat, Mr. Nisar Ahmad participated in "International Training Workshop on Information Technology and its Application". The topics covered in the training workshop included: City Informatization Development and Future; An Introduction to Information Security; Strategic IS Planning; and ERP in China. The event was organized by the Ministry of Science and Technology of the People's Republic of China, from 10th to 30th June 2010, at Shanghai Training Centre, Shanghai.

The event had participation from China, Indonesia, Pakistan, Philippines, Singapore, Thailand and Vietnam. The participating delegates included professionals from the fields of information technology and management, from both private and public sectors. During the workshop, Mr. Nisar presented Pakistan's country report on Information Technology and also briefed about COMSATS' activities and its role for promoting IT in member countries.

A Message from the Chairman Coordinating Council to the Executive Director COMSATS on the Recent Floods in Pakistan

Dear Dr. Qureshi

I wish to express my deepest condolences for the environmental tragedy that has affected Pakistan the past days. Colombia as a developing country knows how difficult must it be for your people to bear this disaster; and I would like to offer you our best wishes for a quick alleviation to the present situation. Please transmit my message to the Pakistani authorities and to all your co-workers.



Eduardo Posada Flórez
Director, Centro Internacional de Física, Colombia.

ACTIVITIES/NEWS OF COMSATS' CENTRES OF EXCELLENCE

CIF WORKSHOP ADDRESSES MICROSCOPY FUNDAMENTALS & APPLICATIONS

Biophysics and Biology of Membranes Research Group of International Centre of Physics (CIF), Colombia, in collaboration with the Colombian Microscopy Association (ASCM) and the Microscopy Unit of the University of Cauca, Colombia, organized the 1st Workshop on Microscopy Fundamentals and Applications, in Bogotá (Colombia), from August 11 to 14, 2010.

The focus of the workshop was directed towards the versatility of microscopy as a tool for basic research and having applications in a number of industries. The seminars given on the occasion by various Mexican and Colombian lecturers covered theoretical bases, technologies, techniques, and applications of microscopy. A number of tools having a potential to address the most important microscopy issues were introduced; these include: image analysis, light, fluorescence, confocal, scanning and transmission electrons, correlative atomic force and interferometric microscopy. Colombian studies that used these technologies, applied to plants, animal biology and materials, were also presented.

The workshop encouraged knowledge exchange among the participants and consolidation of agreements between the relevant organizations for the creation of new local cooperation programmes.

CIIT HOLDS TWO INTERNATIONAL EVENTS IN PAKISTAN

The COMSATS Institute of Information Technology (CIIT) organized the 2nd South Asian International Conference – SAICON 2010 – under the auspices of South Asian Chapter of the Academy for Global Business Advancement, on July 21-23, 2010, in Bhurban, Pakistan. The theme of this international event was 'Nurturing Innovation, Entrepreneurship, Investments and Public-private Partnership in Global Environment'. Minister for Science and Technology, Government of Pakistan, Dr. M. Azam Khan Swati graced the occasion as the Chief Guest.

The 116 papers presented during 8 working sessions of the conference covered a wide spectrum of topics, such as Business Internationalization, Finance and Accounting, Marketing and Consumer Behaviour, Social Entrepreneurship, Innovation, e-Business, Human Resource Development, and Corporate Social Responsibility. Over 250 delegates from Pakistani universities, business schools, industries and government organizations, including 25 from abroad, participated in this three-day conference.

The panel discussion in the closing session, chaired by the Executive Director COMSATS, focused on the key



Participants of CIF's Workshop in Bogotá, Colombia

conclusions of the deliberations. Four renowned scholars constituting the panel, Prof. Dr. Said Elfakhani (Saginaw Valley State University, Michigan, USA); Prof. James Forman-Peck (Cardiff Business School, Scotland, U.K); Prof. Ahmad M. Khalid (Bond University, Australia) and Dr. Bahuddin G. Mujtaba (Nova Southeastern University, USA), gave summaries and indicated the way forward for development of countries in the region, in general, and for Pakistan, in particular.

Also in July, CIIT in association with the Department of Orthopaedic Surgery and Traumatology of Mayo Hospital, King Edward Medical University (KEMU), Lahore, organized the 2nd International Symposium on Biomedical Materials. The participants of this multidisciplinary field comprised surgeons, biologists, materials scientists, chemists, physicists and implant manufacturers.

The papers presented on this occasion consisted of a wide variety of subjects, such as: nanotechnology - advanced materials interface, bi-metal clad wave guided bio-sensors, novel classes of anti-viral and anti-cancer agents, biosensors based on microbes, stem-cell technology, porous bio-ceramics, novel biomaterials, and glass ionomer dental nano-composites.

PCMD, ICCBS, ORGANIZES THE 1ST WOMEN WORLD NEUROSCIENCE CONFERENCE

Dr. Panjwani Center for Molecular Medicine and Drug Research (PCMD) of the International Center for Chemical and Biological Sciences (ICCBS), Karachi, Pakistan, organized the 1st Women World Neuroscience Conference on July 1-2, 2010. This conference was sponsored by an international organization, Women World Neuroscience (WWN), International Brain Research Organization (IBRO). This conference provided women working in the field of neuroscience a platform to interact with each other and develop a network so as to better contribute in developing a

knowledge-base for brain sciences, and find ways to address the prevailing neurological diseases in Pakistan. Director ICCBS, Prof. Dr. Iqbal Choudhary; Coordinator General COMSTECH, Prof. Dr. Atta-ur-Rahman; and Vice Chancellor of Karachi University, Prof. Dr. Pirzada Qasim Raza Siddiqui, were among the distinguished guests of the event. Fifty neuroscientists, physiologists and clinical neurologists participated in this first-of-its-kind event in Pakistan.

RSS ORGANIZES NGMAST 2010 IN AMMAN

The Fourth International Conference on Next Generation Mobile Applications, Services and Technologies (NGMAST 2010) was held in Amman, Jordan, under the Patronage of HRH Princess Sumaya bint El-Hassan, on 26-29 July 2010. This event was jointly organized by the Integrated Communications Research Centre of the University of Glamorgan, UK, and the Royal Scientific Society (RSS) and was hosted by the Princess Sumaya University for Technology (PSUT). The conference is one of the most significant events in the field of mobile applications and technologies and was sponsored by reputable international organizations and industries including Nokia, IEEE Communications Society, and the European Council for Modelling and Simulation, in addition to the SIP Forum and IPv6 Forum.

This four-day conference was the first of this series to be hosted outside Europe. There were 28 technical presentations from leading industrial and research organizations. This conference had participation from 22 countries including: Japan, Korea, India, USA, Canada, and many countries from Europe and the Middle East.

The feedback from international and local participants was overwhelming. The main outcome of the workshop was the agreement on the formation of the Jordanian Chapter of the IPv6 Forum.



Participants of the 4th NGMAST 2010 held in Amman

ORGANIC AGRICULTURE REDUCES THE EMISSION OF POLLUTING GASES - NRC RESEARCH

The experts in the field of agriculture at NRC recommend that organic farming using organic fertilizers generated from agricultural residues should be expanded. Dr. Omaima El Sawan from the Agriculture and Biology Research Division of NRC confirmed that organic agriculture can contribute to reducing the production of carbon dioxide and water consumption by 20 percent. Dr. Omaima also noted the advantage of agricultural residues, which can be a national treasure if exploited properly.

Also, researches at NRC in the field of medicine revealed that the unsaturated fats from the nuts and olives, unlike saturated fats (found in meat and butter) protect humans from heart diseases because it turns liquid at body temperature. These make the liver membrane much softer, allowing cholesterol to move easily into the liver and, consequently, outside the body.

EMBRAPA AGROBIOLOGIA CONDUCTS RESEARCH ON MYCORRHIZAL FUNGI AND NITROGEN FIXING BACTERIA

A challenging study has been coordinated by a researcher of Embrapa Agrobiologia, Katia Teixeira, that aims at assessing the role of bio-diversity of bacterial communities and mycorrhizal fungi as promoters of growth in plants, such as strawberries. The study is being developed from the analysis of strawberry plants in the region of Nova Friburgo, a municipality in the State of Rio de Janeiro (RJ). The city of cold climate, located in the mountainous region, stands out as the leading producer of strawberries in RJ.

In order to reduce the use of agrochemicals in the cultivation of strawberries, the Embrapa Agrobiologia team with support of the Foundation for Research Support of Rio de Janeiro (FAPERJ) is doing an initial survey of micro-organisms that live attached to strawberry crops in the highlands of RJ. The researchers are in a process of analyzing samples of nitrogen-fixing bacteria and mycorrhizal fungi found in the strawberry fields of two private estates in Nova Friburgo.

The mycorrhizal fungi are helpful to plants for meeting their nutritional needs as they naturally associate themselves to the roots of the plants and serve as their extensions, promoting an increased potential for nutrient-uptake, especially phosphorus. Nitrogen-fixing bacteria may be the other important natural allies for the production of strawberries. These are being evaluated for multiplication in a greenhouse using the soil and strawberry plants collected from Nova Friburgo. Among the species of nitrogen-fixing bacteria being studied is *Azospirillum*.

SCIENCE, TECHNOLOGY AND DEVELOPMENT

DECODED WHEAT GENOME TO ADDRESS GLOBAL FOOD SHORTAGES

Bread wheat is one of the most important food crops in the world, especially in the poor and developing countries. However, the wheat production is under threat worldwide due to climate change and increase in demand of the growing population. It is estimated that the world harvesting of the bread wheat, currently at a level of around 550 million metric tonnes per year, will have to be increased considerably to meet the rapidly growing world food demand (*Eureka! Science News, August 26, 2010*). The recent fires in Russia, floods in Asia and related climate effects in other wheat producing parts of the world are expected to cause a huge pressure on the world supply of wheat. The poor and developing countries are likely to suffer the most.

The above-referred report says that scientists have sequenced the entire wheat genome and will make the DNA data available to crop breeders to help them select key agricultural traits for breeding. The wheat genome analyzed by the scientists is five times larger than human genome and can help the farmers to grow wheat with desired qualities, like disease resistance, drought tolerance and increased yields. Scientists believe that the release of data on wheat genome to public will dramatically increase the wheat production.

ADVENT OF RECOMBINANT COLLAGEN FORMULATED BIOSYNTHETIC CORNEAS

The formulation of biosynthetic corneas with recombinant collagen to restore vision and nerve growth has been reported (*Eureka! Science News, August 25, 2010*). This is a good news for those who lose their vision due to some corneal disease or trauma. The number of such individuals, worldwide, is estimated to be around 10 million. Corneal blindness in the poor countries causes a great socio-economic burden due to loss of healthy human resource.

In US, around 42,000 corneal grafts are performed annually, but failure rates are significant. In addition, the use of steroids mandatory with certain corneal material implants limits their use to many patients. Fully synthetic prostheses (without biological activity) have been developed, but their use has been limited to cases where human donor-tissue fails repeatedly. According to this report, a two-year clinical study has demonstrated that surgical implantations of biosynthetic corneas formulated with recombinant human type III collagen (rhCIII) restored vision and promoted nerve sensitivity in patients who had corneal damage and significant vision-loss. These biosynthetic implants are reported to be designed to mimic the human cornea, which is composed mainly of the protein collagen. The recombinant human collagen could provide an important option for patients by reducing the risk of disease transmission and increasing supply of corneal implant materials in the face of the worldwide shortage of donated corneas.

SIMPLE NANO-TECHNOLOGY FOR WATER PURIFICATION

Millions of people in the poor and developing countries have no access to clean water. Several sophisticated and simple techniques to purify water are in vogue but the results are far from satisfactory due to lack of adequate maintenance-capacities in the developing world. This need has been responded to by a scientific project undertaken in the University of Stellenbosch, South Africa (*SciDev.Net, 12 August 2010*). The University scientists have developed a novel technique of purifying water by means of nano-fibre coated sachets, which are similar to the tea-bags used all over the world. The sachets are made of inexpensive clean materials which absorb contamination and microbes when immersed in polluted water. The sachet can be placed in the bottles containing dirty water and taken out after a specified period, leaving the water sufficiently clean for human use. One sachet can clean one litre of the most polluted water. The estimated cost of each sachet is just under half a US cent, economical enough for the people of the developing countries to afford this simple, decentralized and point-of-use technology. The product is reported to be made available in the market place by the end of this year subject to its approval by the concerned South African authorities.

NEW NUCLEAR TECHNOLOGIES FOR THE BENEFIT OF DEVELOPING COUNTRIES

Researchers and policy analysts in the UK believe that new nuclear power production and distribution techniques could be beneficial for developing countries to overcome their energy shortages (*SciDev.Net, 30 August 2010*). The flexible and more user-friendly nuclear technologies are resurging after decades of hesitancy in their use and development as worries on climate change, energy-supply security and depletion of fossil-fuel are now growing intensely. Nuclear power will become viable for energy production in developing countries after 2030. The favoured technologies, in this regard, will include ship-borne power plants and fuel-for-life core reactors which could last for 40 years. The idea of developing reactors with replaceable parts, to extend their life-span to 40-50 years for cost effectiveness, is also gaining more consideration. Another possibility is the fast reactors with 15 times more fuel-efficiency. These reactors are under development and their completion may be accelerated to meet the future market demands. The researchers have also given practicable solutions to address various management issues related to worldwide adaptation of the idea. Severe energy shortages in the developing world and replacement of carbon dioxide emitting power-production facilities with clean energy sources, which are two major concerns for the present and the future, can be adequately addressed by this scheme.

PROFILE OF COMSATS' INTERNATIONAL S&T CENTRE OF EXCELLENCE

EMBRAPA AGROBIOLOGIA, BRAZIL

Introduction

Embrapa Agrobiologia, Brazil, has its origins in the research initiated by Dr. Johanna Döbereiner in 1951. As a young scientist she started work on biological nitrogen fixation (BNF) in the Soils Laboratory of the National Centre for Agronomic Education and Research (IPEACS) at the Seropédica Campus of the Federal Rural University of Rio de Janeiro. Over the years, she gathered a dedicated team of students and young researchers from the University. Her lab became a centre of reference for work on BNF both in Brazil and overseas. The team gradually expanded and was adopted by Embrapa (the Research Corporation of Ministry of Agriculture), which was founded in 1973. The work at the Centre has led to the emphasis on research and development of sustainable agricultural systems with reduced global, regional and local environmental impacts. Today, the Centre is being recognized in nationally and internationally for its excellence in technical and scientific contributions and technologies generated in BNF and organic agriculture.

Mission

As defined in its strategic plan for the period 2008 to 2011, the Centre's mission is to: "Generate knowledge and facilitate technologies and innovation supported by agrobiological processes to benefit a sustainable agriculture for Brazilian society".

Research Activities

The main lines of research of Embrapa Agrobiologia are: Biological Nitrogen Fixation, Plant-growth Promoting Microorganisms, Organic Agriculture, Nutrient Cycling and the Recovery of Degraded Areas. The Centre has launched a highly effective rhizobium inoculant for cowpea, the most important food legume in the north and north east of Brazil. The original work led by Dr. Döbereiner on N₂ fixation associated with grasses and cereals led to the recent development of a multi-strain bacterial inoculant for sugarcane. The Centre has developed varieties of elephant grass (*Pennisetum purpureum*), which can substitute for firewood as biomass for the production of electricity or fuel for rural industries, thus decreasing the pressure on forest reserves and remnants.

Scientific Capacity

Since 1993, in cooperation with the Rural University and the Rio State Agricultural Research Institute, the Centre has developed an organic production unit, which provides for the development of many organic crop-production systems, horticulture, coffee production, and other food crops produced by family agriculture. A great emphasis has been laid on integrated organic production systems, including animal products, such as eggs and, more recently, milk.

In recent years, the nutrient cycling team has been responsible for the assessment of the GHG balance for bioethanol production from sugarcane, soil carbon changes, due to the changes in land-use from native vegetation to pastures, as well as the impact of

the massive change (>25 Mha) from conventional plough tillage to direct drill agriculture, which has occurred over the last 20 years. Recent results have shown that on the free-draining tropical soils (Oxisols), which support most of Brazil's arable crop production, the emission of the potent greenhouse gas, nitrous oxide, is far lower than most soil types used in temperate regions.

The Centre has hosted PhD students from Germany, Holland and other European countries, as well as from Egypt, Congo, India, Trinidad and Tobago, and most frequently, from almost all other Latin American countries.

Achievements

The most spectacular technology produced by the Centre has been the use of fast-growing leguminous trees for the recovery of severely degraded areas and the re-vegetation of mining wastes and tailings. The secret of the success of this technology has been the careful selection of effectively nitrogen-fixing rhizobium strains for several dozen legume tree-species over many years and the development of viable inoculants for arbuscular mycorrhizae, which have spectacular effects on plant phosphorus and water acquisition.

The Centre maintains great prominence in the microbiology and ecology of non-legume-associated nitrogen-fixing bacteria. Since the first discoveries by Dr. Döbereiner in the 1950s, the Centre has been wholly or partially responsible for the discovery and characterization of 16 novel species of nitrogen-fixing bacteria and has recently coordinated the sequencing of the complete genome of *Gluconacetobacter diazotrophicus*, as well as participated in the sequencing of *Herbaspirillum seropedicae*.

International Cooperation

Since its inception, Embrapa Agrobiologia has maintained widespread international exchanges and partnerships. Students and researchers from all over the world have attended short and long term training under various research programmes of the Centre.

Embrapa Agrobiologia has been one of the 16 Centres of Excellence of COMSATS for over 15 years. The Centre now maintains cooperation with international organizations, such as FAO, IAEA, as well as scientific institutions in Argentina, Belgium, Chile, Colombia, England, France, Mexico, and Spain. Some of its partner institutions include: Catholic University of Leuven (Belgium); University of Buenos Aires, CINDEFI and CONICET (Argentina); DFG University of Puebla (Mexico); University of York in (England); CORPOICA (Colombia); and CIRAD (France).

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SELECTED FORTHCOMING SCIENTIFIC EVENTS IN COMSATS' COUNTRIES

3-8 October 2010	12 th International Symposium on 'Biological Nitrogen Fixation (BNF) with Non-Legumes', Rio de Janeiro, Brazil. (www.isbnfnl2010.org)
5-7 October 2010	4 th Islamic Conference of Environment Ministers, Tunis, Tunisia. (www.isesco.org.ma)
16-18 October 2010	3 rd International Conference on BioMedical Engineering and Informatics (BMEI'10), Yantai, China (cisp-bmei2010.ytu.edu.cn)
25-27 October 2010	NanoMedicine-2010, Beijing, China. (bitlifesciences.com/nanomedicine2010)
1-3 November 2010	1 st International Conference on 'Bio-Processing and Application of Microbial Biotechnology in Agricultural', Cairo, Egypt. (www.cunrc.org/conference_details.php?id=12)
8 -10 November 2010	1 st International Conference of Human Genetics and Genome Research Division, Cairo, Egypt. (www.humangenetics2010.org)
9-11 November 2010	23 rd Science and Technology Conference, Kingston, Jamaica. (www.src-jamaica.org/events/eventcal.htm)
22-25 November 2010	12 th International Symposium on Natural Product Chemistry, Karachi, Pakistan. (www.iccs.edu/ISNPC.htm)
8-10 December, 2010	9 th International Conference on Web-based Learning (ICWL 2010), Shanghai, China. (www.hkws.org/events/icwl2010/)

National Workshop on Repair and Maintenance of Scientific Equipment in Teaching, Research Institutions and Small Scale Industries" Dakar, Senegal, October 18-21, 2010

The Commission on Science and Technology for Sustainable Development in the South (COMSATS), in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO) and the Senegalese National Commission for UNESCO, is organizing a National Workshop on "Repair and Maintenance of Scientific Equipment in Teaching, Research Institutions and Small Scale Industries" in Dakar, Senegal, from October 18-21, 2010.

This workshop is being organized to cater to the growing needs of Senegalese technicians, scientists, service engineers and researchers for building indigenous capacities in repair and maintenance of scientific instruments installed at academic and research institutions, as well as small-scale industries. The broader aim is to ensure human resource development and uninterrupted research and economic activity, thus contributing towards the overall socio-economic development of the country. For further details on the event please visit our website: www.comsats.org.

A BRIEF ON COMSATS

The Commission on Science and Technology for Sustainable Development in the South (COMSATS) is an inter-governmental organization, with its Secretariat located in Islamabad.

COMSATS, currently, has 21 countries as its members, spread across three continents, i.e., Latin America, Africa and Asia. A network, of 16 International Science and Technology Centres of Excellence, is also affiliated with COMSATS to contribute to scientific development of its Member States. For detailed information, please visit COMSATS' website: www.comsats.org.

LIST OF COMSATS NETWORK OF INTERNATIONAL S&T CENTRES OF EXCELLENCE

- The Biosphere Reserve – Beni Biology Station (BBS), Bolivia
- Embrapa Agrobiologia, Brazil
- International Center for Climate & Environment Sciences (ICES), China
- Centro Internacional de Fisica (CIF), Colombia
- National Research Centre (NRC), Egypt
- International Centre for Material Science and Technology (ICMST), Ghana
- Iranian Research Organization for Science and Technology (IROST), Iran
- International Centre for Environmental and Nuclear Sciences (ICENS), Jamaica
- Royal Scientific Society (RSS), Jordan
- National Mathematical Centre (NMC), Nigeria
- International Center for Chemical and Biological Sciences (ICCBS), Pakistan
- COMSATS Institute of Information Technology (CIIT), Pakistan
- Industrial Research and Consultancy Centre (IRCC), Sudan
- Higher Institute for Applied Sciences and Technology (HIAST), Syria
- Tanzania Industrial Research and Development Organization (TIRDO), Tanzania
- TÜBİTAK Marmara Research Centre (MRC), Turkey