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Pakistan's nuclear capability is purely for defensive purposes

PAEC's contributions towards defense and socio-economic development laudable: Minister for S&T, Senator Muhammad Azam Khan Swati

Federal Minister for Science & Technoloy, Senator Muhammad Azam Khan Swati presiding over inaugural session of the 35th International Nathiagali Summer College (INSC). To his right is Dr. Ansar Parvez, Chairman, PAEC and to the left is Dr. Riazuddin, Director, INSC.

Our nuclear capability is purely for defensive purposes. We believe in peaceful co-existence and reconciliation and will always strive for peace and prosperity in our region.

This was stated by Federal Minister for Science & Technology, Senator Muhammad Azam Khan Swati while inaugurating 35th International Nathiagali Summer College (INSC) on "Physics and Contemporary Needs" on June 30, 2010, at Nathiagali.

The college was organized by Pakistan Atomic Energy Commission (PAEC) and National Centre for Physics (NCP), Islamabad.

It is only through science & technology that a nation can find a place in this modern world. We are making concerted and dedicated efforts to transform Pakistani society into a

modern and prosperous one, he informed the gathering.

Science has assumed a pivotal role in economic competition. Funds will be allocated for the development of trained and qualified human resource, and the government will also provide support to establish R&D laboratories, so that this trained manpower can have appropriate workplace. Only then science can have its impact on the transformation of our society, he stated.

Lauding the services of PAEC, the Minister said that expansion of nuclear power program is really commendable and we certainly need more electrical energy and we would continue to rely on contribution by nuclear power to meet our energy requirements. He noted with pleasure that Pakistan has achieved some milestones towards nuclear power program.

"I also appreciate the very productive efforts of PAEC in the fields of agriculture, industry and health. This success has been largely possible because PAEC has been investing in human resource development and has been producing manpower for its specific needs", he said.

We look at PAEC's contribution in basic and applied sciences as a role model for our country. Making its premier research and teaching institutes, PINSTECH and PIEAS, more accessible to the national and international scientific community, will foster even better traditions of cooperation and scientific endeavor, he stated.

In view of the significant successes and achievements of the college in promoting education and research in the subject of physics, the Minister proposed that similar colleges on other scientific subjects be launched on this pattern for which Ministry of Science & Technology will provide full support.

In his welcome address, Dr. Ansar Parvez, Chairman, PAEC said that Pakistan has immensely benefited from holding of these Nathiagali Summer Colleges for the last 35 years. The international scientific community generously cooperated with us in arranging these colleges, which have proved a window of opportunities for us all along.

He said, today's science is not an endeavor by individuals in isolation, it is rather a coordinated effort between organizations and nations. For this purpose, Pakistan is actively engaged in various collaborative programs with International Atomic Energy Agency (IAEA), Abdus Salam International Centre for Theoretical Physics, (ASICTP) Trieste, Italy, European Organization for Nuclear Research (CERN) and Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME), Jordan.

Chairman, said, PAEC is running a multidisciplinary program in the domains of national defense, nuclear power, health, agriculture, human resource development and applied research, and is contributing to the socio-economic uplift of the country. He said, the knowledge and skills available with the PAEC is at the disposal of all the national institutions and departments.

We are running 13 state-of-the-art cancer hospitals across the country from where about 500,000 patients are benefiting annually for the diagnosis and treatment of cancer related diseases, most of them free of cost. Five more such hospitals are at various developmental stages, Dr. Ansar Parvez stated.

In the field of agriculture, PAEC has four research institutes, which are undertaking research in the evolution of high-yield crops varieties and agriculture related services for the farmers, Chairman, informed.

Earlier, Director General, National Centre for Physics (NCP), Dr. Hamid Saleem explained the genesis and working of his centre and said, the research facilities available in NCP belong to all the scientists/researchers of the country. Our research laboratories in NCP are open to researchers, M. Phil/Ph.D. students from all over the national universities and institutes for collaborative research. Therefore, active and strong research departments of NCP can play a pivotal role in the promotion of science and technology in the country.

International Nathiagali Summer Colleges (INSC) on Physics and Contemporary Needs have been organized every year since 1976, mostly at the scenic hill resort of Nathiagali near Islamabad, Pakistan. The idea of holding these Colleges came from the distinguished Nobel Laureate, Professor Abdus Salam who emphasized the vital need of communication, as well as for transferring and sharing scientific knowledge, among the scientific community of the Third World. The primary aim of the College is to break the isolation of the scientists in the developing countries by enabling them to interact with an international faculty and colleagues from the Third World.

The truly international character of scientific activity has been underscored by the multinational participation in these colleges. During the last 34 years of INSC, nearly 980 foreign scientists from as many as 72 countries have participated in the proceedings of the College and benefited from a stimulating atmosphere to learn about the latest development from the leading scientists. Over 6500 participants from R&D institutes, universities and colleges from Pakistan have also benefited from this scientific discourse.

Dr. Syed Javaid Khurshid, Deputy Chief Scientist, Pakistan Atomic Energy Commission (PAEC), is the Executive Secretary while Dr. Hafeez R. Hoorani, a faculty member at the National Centre for Physics (NCP) is the Scientific Secretary of this College. Contact with the college can be made at web site http://www.paec.gov.pk/insc

Approval of Bt Cotton Varieties of NIBGE

Recently, Punjab Seed Council (PSC) has approved eight (8) Bt cotton varieties out of which two (IR 3701 & IR 1524) were developed by PAEC's Biotech Centre, NIBGE ,Faisalabad.

In Pakistan, cotton alone contributes nearly 65% of the foreign exchange earnings. Bt cotton technology is expected to reduce production (input) cost as well as reduction in number of sprays of dangerous and toxic chemicals.

A gene isolated from a soil bacterium *Bacillus thuringiensis* (Bt) called *Cry1AC* which was introduced through genetic engineering in a model cotton genotype (Coker-312) followed by recovering into the local cultivated cotton cultivars. The Bt cotton team was led by Dr. Mehboob-ur-Rehman and Dr. Yusuf Zafar (at present DG Agri. & Biotech, PAEC HQs) of the Agriculture Biotechnology Division of NIBGE, Faisalabad. The Group not only bred cotton lines containing Bt gene but also generated a useful biosafety data over the last seven years (2003-2009). Biosafety data is a mandatory requirement for releasing GM cotton in the ecosystem by the National Biosafety Committee of Environmental Protection Agency (EPA). The Biosafety data has also been utilized by various other institutions and local seed companies for the release of Bt cotton varieties.

The Plant Genomics & Molecular Breeding Labs of NIBGE developed IR-3701 which has a very high ginning out turn (GOT) percentage (43-47%) and is substantially higher than the GOT (35-40%) of present cultivated varieties. It simply means more lint than seed. This variety has out yielded the standards and all Bt cotton lines tested in NCVT 2009-10.

The second approved variety IR-1524 is tolerant to water stress, a feature emerging as a national threat to agriculture productivity. It has also shown higher tolerance to cotton leaf virus disease.

It is expected that these two approved cotton varieties will soon be cultivated in large cotton areas of Punjab and Sindh. These efforts will help in achieving cotton vision 2015 of Government of Pakistan.

IR-3701 Bt cotton plant.

8th Training Course in Biotechnology at National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad

PAEC's National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, being a federal research body in the country has a mandate to apply modern and innovative techniques of Biotechnology in agriculture, health, industry and environment. The centre routinely offers up-to-date training programs. The 8th training course was held from April 12-16, 2010 on "Modern Techniques in Biotechnology." Prof. Dr. Iqrar A. Khan, Vice Chancellor, University of Agriculture, Faisalabad, graced the occasion as chief guest at the inaugural ceremony. There were 36 participants from academic, research institutions, medical colleges and private medical laboratories. The training course was a combination of lectures and practical sessions.

Participants of 8th National Training Course on Modern Techniques in Biotechnology with faculty members and chief guest Prof. Dr. Iqrar A. Khan, VC, UAF.

National Executive Management Seminar (NEMS) on "Application of Nuclear Techniques in Water Quality Management and Ecological Research" at PINSTECH

Dr. Shoaib Ahmad, Member (Physical Sciences) PAEC addressing the seminar as chief guest.

Isotope Applications Division, Directorate of Technology, PINSTECH organized a three-day National Executive Management Seminar on "Application of Nuclear Techniques in Water Quality Management and Ecological Research" at PINSTECH, Islamabad from May 10-12, 2010.

Forty seven (47) scientists/ managers/ engineers from seventeen (17) institutions participated in the deliberations of NEMS.

The seminar was inaugurated by Dr. Shoaib Ahmad, Member (Physical Sciences) PAEC. In introductory remakes, Dr. Azhar Mashiatullah, Seminar Coordinator, elaborated that the objective of the seminar was to provide illustrated case studies to demonstrate how nuclear techniques can be used as powerful tools for solving hydrological/ ecological issues. He also briefly introduced various features of the seminar.

Dr. Jamshed Hussain Zaidi, Director General, PINSTECH, in his welcome address, highlighted the issues of environmental degradation in Pakistan. He described contribution of PINSTECH to promote application of nuclear techniques in national/regional environment programs. Dr. Zaidi informed the participants that PINSTECH is playing a key role in nurturing of young researchers through provision of internship to university students.

In his inaugural speech, Dr. Shoaib Ahmad, Member (Physical Sciences) highlighted the water issues in Pakistan with reference to water quality degradation and pointed out that nuclear technologies are very effectively used for identification and remediation of problems in water resource management and environment.

Dr. Shoaib appreciated the role of Isotope Application Division for promoting peaceful application of nuclear techniques in hydrology, ecology and environment. He hoped that NEMS will create a lot of scientific activity among environment research groups working in different institutions.

Engr. Nisar Ahmad, Director Technology, PINSTECH, delivered vote of thanks. He thanked Dr. Shoaib Ahmad, Member (Physical Sciences) for gracing the occasion as chief guest.

The deliberations of the seminar comprised of keynote addresses by environmental experts as well as oral presentations by PINSTECH scientists and participants. Five keynote addresses were delivered by Dr. Riffat Mahmood Qureshi, Director Coordination, PINSTECH, Dr. Syed Azhar Hussain, Director General Pakistan Museum of Natural History, Dr. Ghanzaffar Ali, Global Change Impact Studies Centre (GCISC), Dr. Bilal Butt, DEC, CAFD, PINSTECH and Dr. Arshad Waheed, DCE, HPD, PINSTECH.

Furthermore, 25 oral presentations were delivered by scientists from PINSTECH and participating Institutes.

In the concluding session, Dr. Jamshed Hussain Zaidi, Director General, PINSTECH distributed certificates among the participants.

In his concluding speech, Dr. Zaidi appreciated efforts of seminar coordinator and his team for making the seminar a success. He thanked all participants for their active participation and contribution in the seminar.

Training Workshop on Hybridization Techniques in Tomato Crop held at NIAB

A two-day Training Workshop on "Hybridization Techniques in Tomato Crop" was held at PAEC's Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad from April 1-2, 2010.

The objective of this workshop was to provide hands-on training in hybrid seed production technology to the plant breeders and seed producers. The activity was conducted as a part of the project entitled "Establishment of Facilitation Unit for Participatory Vegetable Seed and Nursery Production Program (EFUPVS & NPP)" sponsored by Ministry of Food and Agriculture, Islamabad. Despite the fact that vegetables fetch high profits, the pace of breeding work particularly in hybrid seed development in Pakistan has been slow due mainly to lack of technical manpower. The aim of this project is to promote local production of hybrid seeds of vegetables and thus reduce the heavy bills on seed import.

Eighteen participants from R&D institutions and private seed companies attended the workshop. The faculty members included scientists of NIAB, Dr. Akhlaq Hussain, Project Director and Mr. Muhammad Habib, Deputy Director (EFUPVS & NPP). In concluding session, Dr. M. Yussouf Saleem, Pr. Scientist/ Workshop Coordinator highlighted the aims and purposes of workshop while Mr. Muhammad Habib presented an overall status of vegetable breeding in the country. Speaking on the occasion, Syed Anwar Shah, Director NIAB briefed the audience about the R&D programs and contributions of NIAB in the field of Agriculture and Biology. Later, he distributed certificates among the participants.

The participants of Training Workshop working in tomato field at NIAB Farm.

2nd National Workshop on Bio-control Technology at NIA

PAEC's Nuclear Institute of Agriculture (NIA), Tandojam organized a three -day 2nd national training workshop on the use of bio-control technology in agriculture from 27-29 April, 2010, which was attended by 30 participants from all over the country.

The participants were provided information on economical production of predators, parasites and their quality control standards for the pest management needs.

The inaugural session of the workshop was graced as chief guest by Dr. Yusuf Zafar, D.G. (Agri. & Biotech.), PAEC Islamabad. He appreciated research activities of NIA and particularly the plant protection division for their contribution to eco-friendly insect pest management in the present scenario. The participants took keen interest in production of parasitoids of fruit flies, sugarcane borers, cotton bollworms and preparation of artificial larval diets of fruit flies. The participants visited the bio-control laboratory working under the supervision of NIA at Matiari sugar mills and witnessed the large scale production of bio-control agents ready for releases in sugarcane and fruit orchards. At the end of the workshop Mr. M. Afzal Arain, Director, NIA awarded certificates to the participants.

Participants of the 2nd National Workshop on Bio-control management of insect pest at NIA, Tandojam. Dr, Yusuf Zafar, D.G. Agriculture & Biotechnology, PAEC, Mr. Afzal Arain, Director, NIA, Dr. M. Hamid, Head, Plant Protection, NIAB & Dr. Nazir Ahmad Course Organizer addressing the audience.

Annual Training Course at NIAB

PAEC's Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad organized the 16th Annual Training Course on "Safety Measures in the use of Radiation in Agriculture and Biological Research" from 8-12 March 2010.

The objective of the course was to acquaint young scientists and students with the safety measures while using the nuclear techniques in agricultural and biological research. The course was attended by 30 participants representing more than fifteen R&D organizations and universities from all over the country. This course has been a regular annual activity and more than 320 researchers have been trained so far.

The course was inaugurated by Dr. Abdul Rashid, Member (M&E), Punjab Agricultural Research Board (PARB), Lahore.

Speaking on the occasion, Dr. Rashid appreciated the research achievements and efforts of NIAB for dissemination of knowledge and training of scientific manpower. He commended the efforts of course organizer, Dr. Nasim Akhtar and patronage of authorities for regularly organizing this training course.

The chief guest, Dr. Syed Arif Ahmad, DG, DGS, PAEC, Islamabad, addressing the Concluding Session of the Training Course. Sitting on the stage (from left to right) are Dr. Z.M.Khalid, Director NIBGE, Syed Anwar Shah, Director NIAB and Dr. Nasim Akhtar, Course Coordinator.

Earlier, Syed Anwar Shah, Director NIAB highlighted the achievements of the institute. He mentioned that 27 improved crop varieties evolved by NIAB are grown on vast area in the country. The additional income accruing from these varieties runs into billions of rupees and farmers are also benefiting from other technologies developed by the institute. In the concluding session, Dr. Syed Arif Ahmad, DG, DGS, Islamabad, Pakistan Atomic Energy Commission awarded certificates to the participants. Dr. Arif applauded the contributions of NIAB in agricultural research and national economy as well as human resource development.

MINAR holds a Thyroid Seminar

PAEC's Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) arranged a one-day National Thyroid Seminar on 2nd May, 2010, which was attended by nuclear medicine physicians from several PAEC medical centres as well as Shaukat Khanam Hospital, Punjab Institute of Cardiology, Multan Institute of Cardiology and Nishtar Hospital. This was the third nuclear Thyroidology related event at MINAR; two consensus meetings held previously have already resulted in an international publication.

Given the importance of Nuclear Thyroidology, other similar seminars are planned too. MINAR continues its efforts in training and education through its frequent seminars, workshops courses etc .

Some of the participants at thyroidology meeting.

Chairman's Assignment Abroad

Dr. Ansar Parvez, Chairman, PAEC participated as a Panelist in 13th Annual Power and Electricity World Asia Congress in Singapore from 05-09 April 2010.

Members' Assignments Abroad

Dr. Shoaib Ahmad, Member (Physical Sciences), PAEC participated in SESAME Funding Meeting held in Amman, Jordan from 28 April to 01 May 2010.

Member (Physical Sciences) also participated in 16th Council Meeting of SESAME held in Cairo Egypt from 31 May to 03 June 2010.

Mr. Muhammad Naeem, Member (Fuel Cycle), PAEC participated in the Nuclear Industry Event on the Sidelines of Nuclear Security Summit at Washington DC, USA from 12-14 April 2010.

Assignments of PAEC Experts Abroad

Mr. Hamid Mahmood, Senior Director, Directorate of Nuclear Power Engineering Structures (DNPES), PAEC carried out assignment as an IAEA Expert for Site Safety Review in Amman, Jordan from 04-08 April 2010.

Mrs. Zamurrad Baig, DCS and Syed Perwaiz Asdaque, PS, KNPC, Karachi carried out assignment at ling Ao Site, Shenzen, Guandiong, China, from 26-30 April, 2010 for Follow-up Mission on the Review of Safety Parameter Display System (SPDS) and Observe Developments in the MCR under the Project "Long Term Safety of KANUPP (LTSK)".

Dr. Naseem Begum, Deputy Chief Medical Officer, Institute of Radiotherapy & Nuclear Medicine (IRNUM), Peshawar is undertaking Expert Mission for six months w.e.f 17-05-2010 to 16-11-2010 at IAEA HQ, Vienna to assist IAEA in implementing both RB&TC Projects related to the field of Radiotherapy.

Mr. Ghulam Rasul Athar, Director, ASAD, PAEC, Islamabad carried out assignment as an IAEA lecturer for Regional Workshop on Developing Scenarios for Electricity and Water Demand for Nuclear Energy Planning in GCC using IAEA's Analytical Tools MAED and MAWD at IAEA HQ., Vienna (Austria) from 24 May to 04 June, 2010.

Mr. Ijaz Ahmad, Principal Engineer, Applied Systems Analysis Division (ASAD), PAEC, Islamabad is carrying out assignment as a lecturer in National Training Course on IAEA's MESSAGE Model at Accra, Ghana from 31-05-2010 to 11-06-2010.

Mr. Abid Anwar Shaikh, DCE, Mr. Zafar Kalim, PE and Mr. Ashraf Ali, PS, KNPC, Karachi are carrying out assignment as National Consultants at Candu 6, Cernavoda NPP (Romania) for Evaluation of KANUPP Start-up Equipment Replacement and Suggested Improvement (EM 103) from 31 May - 4 June 2010 under TC Project-Long Term Safety of KANUPP (LTSK).

As national counterpart to RCA project, Dr. Ihsanullah, DCS/Head Food Science Division, NIFA, Peshawar participated in the consultants meeting to review and adopt guidelines for the audit and accreditation facilities (Regional Technical Cooperation Project RAS-5050) held at Jakarta, Indonesia from 10-14 May 2010. He also presented a special talk on “How food irradiation facilities are regulated in Pakistan?” in the meeting.

Appointment

Dr. Manzoor Ahmad Choudhry, Deputy Chief Engineer, Head, Isotope Application Division, PINSTECH, Islamabad proceeded to Vienna (Austria) on 03-04-2010 for undertaking appointment as Isotope Hydrologist (P-3) at the International Atomic Energy Agency for a period of three years w.e.f. 04-04-2010 to 03-04-2013

Visits of Foreigners to Pakistan

Mr. Takashi, Shoji, Director WANO-TC visited PAEC HQ on 6th April, 2010 for a meeting with Member (Power), PAEC to explain implementation of new WANO initiative.

Mr. Luca Bosi, GE Engineer (Italian) visited INMOL, Lahore on 6th April, 2010 for a period of one week for Testing of Hot Lab.

Mr. Leonel Granados Brenes, GE Engineer from USA visited INMOL, Lahore for six weeks started form 12th April 2010 for installation of QC Lab.

Mr. Hemming Lars Ake Olsson, GE Engineer from Sweden visited INMOL, Lahore for two weeks from 15th April, 2010 for Testing & Calibration of Cyclotron Beam.

Dr. Athar Osama (Pakistani) from Technomics, UK working on a project "Atlas of Islamic World Science and Innovation" (AIWSI) visited KNPC, INMOL, PIEAS and PINSTECH from 16-20 April, 2010.

The following three experts from ENCONET Ltd, Croatia (former ENTEKO Ltd, Croatia) are visiting CHANSUPP-I from 24-04-2010 to 08-05-2010 for execution of tasks in the scope of contract between C-1 and ENCONET Ltd. for the development of Symptom Based Emergency Operating Procedures (SEOPs) for CHASNUPP-I:

1. Mr. Tomislav Bajs, (Croat) Director ENCONET
2. Mr. Ivica Basic, (Croat) Lead ENCONET expert
3. Mr. Vladimir Krize, (Croat) Lead ENCONET expert

Mr. Randolph Strengberg and Mr. Kersten wolf Gang (German Nationals) visited NORI, Islamabad on 07-04-2010 to deliver presentation on PACS.

A five members WANO Team visited KANUPP-I, Karachi from 10-14 May, 2010 for a "Technical Support Mission" under Managing ageing of Plant equipment with focus on Planning for KANUPP Steam Generators Tube Bundle Replacement under program of "Long Term Operation of KANUPP".

Indigenous Development of In-core Thimble Cleaning System at C-1

Equipment for In-core thimble cleaning of a PWR nuclear power reactor has been designed and fabricated indigenously at Chashma Nuclear Power Plant-1. This facility will not only meet the demands of C-1 but it can also be used in future PWRs in Pakistan.

In-core thimbles are installed in a PWR reactor core to facilitate inward and outward movement of nuclear/radiation detectors used for the measurement of fuel burn up, reactor activity and other nuclear parameters during plant operation. Periodic cleaning of these In-core thimbles is mandatory to facilitate Eddy Current Testing and smooth detector movement during operation. This equipment is interfaced with reactor core from the apertures of bottom mounted In-core thimbles which are present beneath the reactor pressure vessel. Cleaning process includes chemical cleaning, air drying, water flushing, vacuum drawing and lubrication of bottom mounted 16 meter high thimbles. As this activity is prone to industrial, chemical and nuclear hazards for reactor core as well as for working personnel, therefore, a closed loop system is required to carry out the job safely and efficiently.

A team led by Hussain Kamran Gardezi, SE started work on the indigenous development of this system in August, 2009 as a part of wider indigenization plan. Target date of tested product was set as first week of April, 2010, in time for deployment in RFO-6.

This work was completed on 6th of April, 2010 and the equipment was tested on a mock up fabricated for this purpose. On 14th of April 2010 cleaning was performed on In-core thimbles of C-1 reactor successfully.

In-Core thimble cleaning task has a lot of technical and safety related issues and intricacies, due to which there are very few companies in the world which provide this equipment and services albeit at a very high cost. Therefore indigenous development of this equipment and services will not only save national exchequer and reduce dependency on import for C-1 and the future NPP's of Pakistan, but also after refinement, this equipment and service can be exported to other PWRs of the world.

Indigenously developed thimble cleaning equipment.

Equipment connected with the In-core thimbles.

DG (CNPGS) visits during final testing.

Team members at work in reactor building.

PAEC Oncologist Honored

Dr. Naseem Begum, Deputy Chief Medical Officer (DCMO), Institute of Radiotherapy and Nuclear Medicine (IRNUM), Peshawar has been honored with "ESTRO Honorary Membership Award 2010". This award will be conferred upon her by the president of European Society for Therapeutic Radiology and Oncology (ESTRO) in the prestigious presidential symposium of 29th Congress to be held in Barcelona, Spain in September 2010. ESTRO has nominated her for this award for her significant contributions in the field of Oncology.

Edited and produced by Muhammad Ijaz, Director, Scientific Information and Public Relations, Pakistan Atomic Energy Commission P.O. Box No 1114, Islamabad, e-mail:sipr@paec.gov.pk