

ANNUAL REPORT

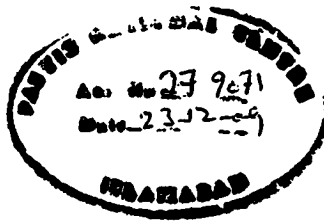
2006 - 2007



Pakistan Science Foundation
Islamabad

ANNUAL REPORT

2006-2007



PAKISTAN SCIENCE FOUNDATION
1 - Constitution Avenue
Islamabad

PAKISTAN SCIENCE FOUNDATION

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ABBREVIATIONS

AJK	Azad Jammu and Kashmir
B	Balochistan
C	Centre
F	Frontier (NWFP)
P	Punjab
S	Sindh
AKU	The Aga Khan University, Karachi
ARIQ	Agriculture Research Institute, Quetta
P-AU	Agricultural University, Faisalabad
BU	Balochistan University, Quetta
BZU	Bahauddin Zakaria University, Multan
CEMB	Centre of Excellence in Molecular Biology, Lahore
CEME	College of Electrical and Mechanical Engineering, Rawalpindi
CEWRE	Centre of Excellence in Water Resources Engineering, Lahore
GCU	Government College University, Lahore
GU	Gomal University, D.I. Khan
KU	Karachi University, Karachi
NARC	National Agricultural Research Centre, Islamabad
NIBGE	National Institute for Biotechnology and Genetic Engineering, Faisalabad
NSFC	National Science Foundation of China
PMNH	Pakistan Museum of Natural History, Islamabad
PINSTECH	Pakistan Institute of Nuclear Science and Technology, Islamabad
F-PU	Peshawar University, Peshawar
P-PU	Punjab University, Lahore
QAU	Quaid-i-Azam University, Islamabad
SALU	Shah Abdul Latif University, Khairpur, Sindh
SIUT	Sindh Institute of Urology & Transplantation, Karachi
SU	Sindh University, Jamshoro
PCCC	Pakistan Central Cotton Committee, Sakrand
UAA/UAAR	University of Arid Agriculture, Rawalpindi
COMSATS	Commission on Science and Technology for Sustainable Development in the South
COMSTECH	OIC Standing Committee on Scientific and Technological Cooperation

Agr	Agricultural Sciences
Bio	Biological Sciences
Biotech	Biotechnology
Chem	Chemical Sciences
Comp	Computer Sciences
Earth	Earth Sciences
Eng	Engineering Sciences
Envr	Environmental Sciences
Med	Medical Sciences
Phys	Physical Sciences

Others

SSGC	Sui Southern Gas Company
NSLP	Natural Sciences Linkages Programme
P.I.	Principal Investigator
NSTC	National Science and Technology Commission
BISE	Board of Intermediate and Secondary Education
PSDP	Public Sector Development Programme
DDWP	Departmental Development Working Party
WWF	World Wild Life Fund

EXECUTIVE SUMMARY

PAKISTAN SCIENCE FOUNDATION (PSF)

Pakistan Science Foundation is the apex body for promotion and funding of scientific and technological research and other related activities in the country. The tasks undertaken by the Foundation for the performance of its statutory functions are divided into following three broad categories.

i. Science Promotion

To promote basic and applied research in universities and research institutes on scientific challenges & activities related to socio-economic needs/development of the country.

ii. Science Popularization

To increase public awareness about science through science popularization activities by establishing museums, clubs, herbaria and planetaria etc.

iii. Scientific Centres

To establish centers for comprehensive scientific and technological information systems and services.

Some of the activities pertaining to these objectives are undertaken by Pakistan Museum of Natural History (PMNH) and Pakistan Scientific and Technological Information Centre (PASTIC), the two subsidiary organizations of PSF, while others are performed by the PSF Science Wing and are reflected as under:

I. RESEARCH SUPPORT

Research support is the principal programme of the Foundation for the promotion of basic and fundamental research relevant to socio-economic needs of the country. During 2006-07, a total of 340 projects in the fields of Agriculture, Biology, Biotechnology, Chemistry, Computer, Earth Sciences, Engineering, Medical Sciences and Physics remained under consideration. of the total projects, 166 (129 under Non-Development budget and 37 under Development budget) were on-going and an amount of Rs. 17.753 million was released on account of due installments of on-going projects. The remaining 174 were under process, of

which 25 projects costing Rs. 22.46 million were sanctioned and an amount of Rs.10.306 million was released on account of 1st installment of approved projects.

Monitoring and evaluation of on-going projects sponsored by the Foundation is an important function of the Research Support Programme. 93 technical reports of on-going projects including semi-annual, annual and final reports were received. The semi-annual and final reports were scrutinized, whereas the annual and final reports after evaluation by the subject experts were placed before the relevant Technical Committees for consideration and adoption. During the year, 07 projects were technically completed.

Based upon the results of completed projects, 03 M.Phil/M. Sc. Agric. (Hons), 01 M. Sc. degrees were awarded to the research associates employed and 02 Ph. D. students were working under PSF supported projects.

Natural Sciences Linkages Programme (NSLP) Endowment Fund

In view of expanding trade of agricultural commodities between the two countries, the Commodity Credit Corporation from United States of America and Ministry of Finance, Government of Pakistan signed an Agreement for Establishment of Natural Sciences Linkages Programme (NLSP) under PL-480 scheme. Under the agreement an Endowment Fund has been created in PSF under the umbrella of Ministry of Science & Technology (MoST), Government of Pakistan.

The primary goals of this programme are:

- To increase the contact and collaboration among natural scientists and institutions of biological research, development and higher learning between the two nations.
- To provide researchers and institutions with opportunities to exchange information, ideas, skills and techniques.
- To enhance opportunities of collaboration in solving problems of common interest relating to natural sciences and
- To utilize special research and development facilities or opportunities available among the two countries.

During the year 2006-07, the 2nd tranche of Rs. 249.455 million was also received, thus totaling the amount to Rs. 498.910 million, which was deposited in the National Bank of Pakistan.

Research projects were invited in December 2006 and as a result, 42 project proposals from different universities and research institutions were received for financial assistance under the Programme. The proposals were initially scrutinized at PSF and are in the process of peer review.

Science Promotion Activities

1. Financial assistance for holding science conferences, seminars and workshops:

An amount of Rs.0.805 million was paid to 18 organizations for holding of conferences/seminars/workshops on important scientific topics.

2. Publication of Scientific Journals:

An amount of Rs.0.315 million was paid to various organizations for the publication of eight (8) scientific journals.

3. Awards and Fellowships:

Fellowships were awarded to two (2) M.Phil/Ph.D. scholars @ Rs.6000/- per month, studying in various local universities.

4. International Liaison:

Five (5) teams of scientists from United States, Germany, France, China and Malaysia visited PSF and discussed matters of mutual interest with PSF scientists.

2. PLANNING & DEVELOPMENT

Development funds amounting to Rs.18.0 million were utilized for the following development projects:

1. Financial Support to Scientific Societies in Pakistan.

Funds amounting to Rs.9.50 million were paid to 16 Scientific Societies for holding of science conferences/seminars/workshops, publication of scientific journals and establishing linkages with similar bodies abroad.

2. Participation of Scientists and Technologists in International Conferences, Seminars and Workshops (Phase II).

A total of 90 travel grant requests for presentation of research papers and attending training courses abroad were received, out of which 35 travel grants were approved by the Foundation. However, grants could be provided to 24 scientists only. An amount of Rs 3.50 million was utilized on the project.

3. Automation of PSF Research Support Programme and other Activities:

Funds amounting to Rs.5.0 million were utilized for procurement of computers, servers, scanners, and software along with other networking equipments. Except the Project Director, rest of the project staff has been recruited.

3. SCIENCE POPULARIZATION

Popularization of Science is a major statutory function of Pakistan Science Foundation. The Foundation has taken up a number of programmes including science exhibitions, science fairs, science film shows, popular science lectures, science quiz competitions, science essay & poster contests, establishment of science centers/corners and strengthening of laboratories of high schools etc. Various programs undertaken by PSF during the year are summarized here under.

Science Caravan is a Mobile Science Exhibition that has been designed to increase public awareness about science and to motivate the younger generation of Pakistan towards study of science. At present nine Science Caravan Units are in operation, two in each of the provinces and one for Federal area. Keeping in view the increasing demand for Science Caravans, a new PC-I for preparation of six additional Caravans has been submitted to the Ministry of Science & Technology. During the year under report, the Caravan units organized 377 days of Science Exhibition in the schools and industrial fairs, wherein 405 schools participated and 212,356 students and general public benefited.

For Promotion and Provision of **Scientific Books**, PSF purchased 150 copies of the book entitled "Islam: The Knowledge Based Religion" edited by Dr. M.M. Qureshi from Pakistan Association for History and Philosophy of Science. The books were distributed among the

Universities and S&T organizations of the country. 12000 copies of the monthly Popular Science magazine “Global Science” were procured and provided to 1000 schools during the year.

16th Science Essay Competition was organized among 22 Boards of Intermediate and Secondary Education of the country; the topic was “Allergy”. Similarly, **16th Science Poster Competition** was also arranged, topic for the year was “Science and Society”. Students from all Boards participated in the competition and an amount of Rs.478,000.00 was awarded to the winner students as prize money.

On the occasion of “**World Science Day for Peace and Development**”, PSF, MoST and UNESCO jointly organized a Convention of Scientists on 20th November, 2006 at Hotel Holiday Inn, Islamabad. A live talk show on PTV World “News Morning” was also aired.

Second Meeting of Nobel Laureates with Pakistani Students/Young Scholars was jointly organized by PSF, MoST, PAEC, HEC and COMSATS on 27-31 March, 2007 at Islamabad and Lahore. Three Nobel Laureates namely Prof. Peter Agre, (USA; Nobel Prize in Chemistry 2003) Prof. Klaus Von Klitzing (Germany; Nobel Prize in Physics 1985) and Prof. Douglas Osheroff (USA; Nobel Prize in Physics 1996) participated in the meeting. Prof. Dr. Atta-ur-Rahman, *N.I., H.I., S.I., T.I.*, Chairman HEC was the chief guest of the Inaugural session held on 27.3.2007 at Holiday Inn Hotel Islamabad.

Science & Technology Expo-2007 under the title “*Shaping the Future*” was organized by Pakistan Science Foundation on behalf of the Ministry of Science and Technology at newly constructed Pakistan Monument at Shakarparian, Islamabad from 24 March to 23 April 2007. The main objective of the Expo was highlighting the achievements of the Public Sector S&T-R&D Organizations. More than 20 organizations arranged their stalls in the Expo and about 100,000 persons visited the Expo.

In connection with UNESCO project “**Breaking the Poverty Cycle of Women**”, PSF in collaboration with MoST and UNESCO organized 3rd International Meeting of the Sub-Regional Network on Scientific Education and Popularization of Science on 6th -7th Feb, 2007 at PSF Auditorium, Islamabad. First draft of the supplementary readers prepared by PSF on the themes Mother Child Health Care, Hepatitis, HIV/Aids and Simple Scientific Experiments was discussed in the meeting.

PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

The main objectives of PMNH include research and public education on the natural resources of the country. For research purpose PMNH scientists carried out field work in many localities of Sindh, Punjab, NWFP, AJK, Balochistan. and the Northern areas of Pakistan. A large number of specimens of animals, plants, rocks, minerals and fossils were collected along with field data and photographs. These specimens were preserved, identified, catalogued and stored in the reference depository of PMNH for further research and future reference. Work was carried out on 5 national and one international research projects. During the year, 2 books and 22 research articles were published in reputed national and international journals by the PMNH scientists. Two technical Reports on completed research projects were submitted. The geologists of PMNH arranged a seminar on Post 8th October Earthquake Scenario in which renowned seismologists & city planners participated and presented suggestions to meet similar challenges in future. Officers of PMNH attended one international and 2 national science conferences related to natural resources. Several officers received trainings within and out of the country on management, project management, computer applications, data storage, scientific techniques and library science. As part of educational activities, large number of visitors were provided guided visits to National Science Expo 2007. Many lectures/film shows on scientific topics were shown to a large number of students visiting the Display Centre of PMNH. Some 27000 people visited PMNH during the year. Several M. Sc., M. Phil. and Ph. D. students from various universities of the country were provided expert guidance by the senior scientists of PMNH. Major part of the work on the development project on Completion of Block II & Strengthening of Research and Display Activities of PMNH was completed.

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

Pakistan Scientific and Technological Information Centre (PASTIC) is the premier organization in the field of information dissemination that serves as a gateway for access to and delivery of S&T information catering to the S&T information needs of the researchers. It

is one of the few public sector organizations which has acquired ISO: 9001: 2000 Certification.

PASTIC National Centre is housed in its own building at Quaid-e-Azam University Campus, Islamabad with comprehensive collections of publications in various fields of Science and Technology. PASTIC has sub-centres working at Karachi, Lahore, Peshawar, Quetta, Faisalabad and Muzaffarabad.

Main objective of PASTIC is to procure, process and disseminate information in all disciplines of Science and Technology. To meet this objective, PASTIC develops inter-library cooperation for sharing resources, establishes and maintains links with international/regional information networks/agencies. PASTIC provides training to information professionals in modern information handling and management techniques. Collaborations with different organizations and agencies enhance the scope of information that is offered to clients and help PASTIC to respond to the diverse needs of a broad community of users.

During 2006-07, PASTIC received 3000 requests for supply of S&T articles, against which 2304 were honored. Under bibliographic Information Service 75,845 references/abstracts on various S&T topics were supplied to 568 researchers/users on request. During the period under review, Vol. 43 of Pakistan Science Abstracts was published in ten different disciplines and these were distributed among S&T/R&D organizations and academic institutions as part of information dissemination activities. PASTIC Library has initiated SDI (Selective Dissemination of Information) service to save the precious time of users by circulating Fresh Arrivals to Libraries & Researchers. About 680 users visited PASTIC Library for reference, reading and photocopying services. 1125 articles were supplied to the researchers. 1026 issues of national & international journals along with books, reports, miscellaneous documents, etc. were received in the library which were processed and shelved for use. Virtual Library Services were provided to 35 users. Automation and digitalization of PASTIC library also remained in progress during the period under review.

PASTIC also acts as the National Focal Point for International/Regional Information Networks, like SAARC Documentation Center, WHO/CEHANET and UNESCO. During the year 2006-2007, information/data received from these organizations was disseminated among

the relevant institutions and professionals. 8 PASTIC officers and one officer of MoST also availed training under different SDC training programmes. In addition, the UNESCO developed WINISIS package (English Version) was provided to various organizations. Two international workshops “SAARC Workshop on Access to Information and Intellectual Property Rights Issues” and “Data Warehousing and Data Mining” were organized at Islamabad

Under the development project of PASTIC “Science Awareness through TV Channel”, 10 S&T documentaries on environment were translated, dubbed in Urdu and aired on ATV, 50 S&T educational programmes from World Wide Entertainment, Australia were procured and four local S&T documentaries on Salt Range (Khewra Mines), River Systems of Pakistan, Biotechnology in Pakistan and Medicinal Plants in Pakistan were produced. Also two science awareness workshops on “Media & Science Awareness in the Knowledge Society” were organized under this project.

DETAILED ANNUAL REPORT

INTRODUCTION

Pakistan Science Foundation (PSF) was established on June 30, 1973 under the Pakistan Science Foundation Act No. III of National Assembly (Annexure I) as an autonomous body to promote and finance scientific and technological activities having a bearing on the socio-economic needs of the country. Under the Act, the Foundation has been entrusted to carry out the following functions:

- i) Establishment of comprehensive scientific and technological information and dissemination centers.
- ii) Promotion of basic and fundamental research in universities and other institutions on scientific problems relevant to the socio-economic development of the country.
- iii) Utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale.
- iv) Establishment of science centers, clubs, museums, herbaria and planetaria.
- v) Promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular.
- vi) Organization of periodical science conferences, symposia and seminars.
- vii) Exchange of visits of scientists and technologists with other countries.
- viii) Grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country.
- ix) Special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific efforts of the country.

The Foundation shall also:

- i) Review the progress of scientific research sponsored by it and evaluate the results of such research.
- ii) Maintain a National Register of highly qualified and talented scientists/engineers and doctors both in and outside Pakistan, and to assist them in collaboration with concerned agencies to seek appropriate employment.
- iii) Establish liaison with similar bodies in other countries.

The activities performed under the above mentioned statutory functions are given in the chapters that follow.

CHAPTER – 1

ACTIVITIES & PROGRAMMES

The activities and programmes undertaken by the Foundation for the performance of its statutory functions can be broadly divided into the following four categories:

- i. Establishment of Comprehensive Scientific and Technological Information and Dissemination Centers.
- ii. Promotion and Financing of Scientific Research in the Country and the Utilization of the Research Results.
- iii. Promotion and Popularization of Science in Society.
- iv. International Liaison.

The first activity is carried out through **Pakistan Scientific and Technological Information Centre (PASTIC)**, a subsidiary organization of PSF. The other functions i.e., research support and science popularization etc., are performed by the Science Wing of the Foundation. Functions of the Science Wing of PSF are further subdivided as under.

Science Promotion Section is performing the following activities:

1. Research Support
 - a) Grants for Research Projects
 - b) Institutional Support
2. Research Evaluation
3. Promotion/funding of Scientific Societies/Learned Bodies
4. Funding of Conferences, Symposia, Seminars & Workshops.
5. Travel Grants
6. International Liaison
7. Awards and Fellowships
8. Survey and Statistics
9. Scientists Pool
10. Planning and Development Program

Science Popularization Section carries out science popularization activities including Science Caravans, Science Clubs, Science Fairs and holding Popular Science Lectures, Workshops, Conferences and Symposia.

In addition to PASTIC, the other subsidiary organization of PSF is the **Pakistan Museum of Natural History (PMNH)**, established in 1979 to serve the national needs in the vitally important areas of research, conservation and education involving Pakistan's heritage of natural resources. The Museum is a National Repository for permanent storage of plants, animals, rocks, minerals and fossils of the country.

The progress of the work carried out by the Science Wing of the Foundation, PMNH and PASTIC during the year 2006-2007 is summarized in the following pages.

1. PAKISTAN SCIENCE FOUNDATION (PSF)

1.1 RESEARCH SUPPORT

1.1.1 Research projects Funded from Non Development Budget

Research Support (Science Promotion) is the principal programme of Pakistan Science Foundation for the promotion of basic and fundamental research, having relevance to the socio-economic needs of the country, however, some applied research is also supported. The criteria for funding of research projects by the Foundation are; competence of the scientific personnel to carry out research, institutional capabilities, i.e, availability of basic equipment and laboratory facilities, scientific merit of the proposed research projects and likelihood of completion of the proposed research within the stipulated time. Each proposal, after getting reviewed from an expert in the particular field, is placed before the relevant Technical Committee for technical evaluation and recommendations regarding provision of funds under various heads of expenditure proposed by the researchers. The proposal, if recommended by the Technical Committee, is then submitted to PSF Executive Committee for final approval.

a. Under process Projects:

During the report period, 174 proposals remained under active consideration of the Foundation. Of these, 120 were newly received including 42 under NSLP, while 54 were carried over from the previous years. Out of which 25 projects from non-development budget were approved by the Foundation at a total cost of Rs. 22.460 million (**Annexure-II**), whereas Rs.10.306 million were released on account of first installments.

b. On-going Projects:

During the year, 129 projects from non-development budget including 10 under Industrial Liaison Programme were on-going. The Foundation evaluates the technical progress as well as financial position of on-going projects continuously till the completion. During the year, 55 reports (semi-annual, 1st and 2nd annual & final) were received. The relevant PSF staff scrutinized the semi-annual reports, whereas the annual reports, after initial scrutiny, were sent for evaluation to the subject experts to assess the interim progress of the projects. It may

be mentioned that due installments of on-going projects are released only if the interim progress of the projects at the end of each project year is satisfactory. An amount of Rs. 17.753 million was released on account of due installments (including review/evaluation fee) of ongoing projects. A list of the semi-annual and annual reports is given in **Annexure-III**.

c. Completed Projects:

During the year, 04 research projects were completed. The subject experts evaluated these reports and these were subsequently submitted along with evaluation reports to the relevant PSF Technical Committees for consideration and adoption. Meanwhile, the accounts of these projects were also settled. A list of the completed projects followed by their summaries is given below.

i. List of Completed Projects:

S. No.	Project No.	Project Title
1.	P-NIBGE/ Biotech/Agr (33)	Engineering phage-type promoters to over express bi-functional proteins in rice proplastids to develop biosafe transgenic plants.
2.	C-NARC/ Biotech/Agr (36)	Multiplication of virus free banana plants and their field assessment.
3.	P-NIAB/ Biotech /Agr (38)	Characterization of virulent races of blight and wilt pathogens using biological and DNA molecular marker techniques and evaluation of chickpea germ plasm for resistance against these diseases.
4.	S-KU/ Biotech/Med (42)	Antipsychotic drugs blood dyscrasia and hematological safety.

ii. Summaries of Completed Projects:

Project No.	P-NIBGE/Biotech/Agr (33)
Project Title:	Engineering phage-type promoters to over express bi-functional proteins in rice proplastids to develop biosafe transgenic plants.
Duration:	3-Years

Date of Initiation: 01.03.2002
Date of Completion: 28.02.2005
Final Report Received: 03.12.2005
Location of Scheme: NIBGE, Faisalabad.
Principal Investigator: Dr. Muhammad Sarwar Khan, Principal Scientific Officer
Total Expenditure: Rs. 674,686/-

Main Objectives:

- Isolation of NEP promoters from rice genome, engineering synthetic plastid/*E.coli* genes leader and downstream box sequences. Cloning and sequencing of chimeric promoters and fusion of chimeric translational signals with visual bifunctional proteins.
- Cloning of plastid flanking regions to target chimeric genes through homologous recombination into the plastid genome of embryogenic rice cells using microprojectile bombardments.
- Visual screening of transformation events, and molecular analysis of transgenic plants.
- Testing bi-functional protein expressing plants lines for seed transmission assay under containment glass house conditions.

Summary of work done:

Plastid transformation in higher plants is accomplished through a gradual process, during which all the 300-10,000 plastid genome copies are uniformly altered. Antibiotic resistant genes incorporated in the plastid genome facilitate maintenance of transplastomes during this process. Given the high number of plastid genome copies in a cell, transformation unavoidably yields chimeric tissues, which requires the identification of transplastomic cells in order to regenerate plants. A visual marker system for plastid transformation, termed FLARE-S, which is obtained by translationally fusing aminoglycoside 3" -adenyltransferase with the *Aequorea victoria* green fluorescent protein, was used in these studies. The visual marker was expressed either standard promoter or under the promoter recognized by phage-type polymerase. The full-length ribosomal RNA polymerase promoter when used to drive the FLARE-S in addition to ClpP produced antibiotic-resistant shoots on the regeneration medium. Genomic analysis as well as FLARE-S detection under stereo microscope equipped with GFP detection system confirms the plastid transformation in rice. Earlier, we reported

heteroplasmic unstable *Japonica spp.* rice transformation results by utilizing standard PEP promoter. However, these results are obtained with *Indica Spp.* rice 'super basmati'. Rice transformation is being pursued in several laboratories around the world without results, however, this is the first report from this group on stable rice transformation, which is being considered as a scientific breakthrough as far as cereal plastid transformation is concerned.

Project No:	C-NARC/ Biotech/Agr (36)
Project Title:	Multiplication of virus free banana plants and their field assessment.
Duration:	3-Years
Date of Initiation:	01.07.2003
Date of Completion:	30.06.2006
Final Report Received:	18.07.2006
Location of Scheme:	NARC, Islamabad.
Principal Investigator:	Mr. Aish Muhammad, Senior Scientific Officer
Total Expenditure:	Rs. 5,28,798/-

Main Objectives:

- Production of disease free banana plants through tissue culture and establishment at the farmer's field.

Summary of work done

Banana is an important fruit crop of Pakistan cultivated over an area of more than 33,000 hectares with annual production of 1,03,000 tonnes. Its production declined drastically in early nineties due to spread of banana bunchy top disease caused by banana bunchy top virus (BBTV). Being vegetatively propagated crop, this virus spread in new plantations with the planting material (suckers). To overcome the problem, the immediate choice was the production of disease free banana plants through in vitro techniques to replace the infected plantations. In the present study focus was on disease free banana plant production through tissue culture and evaluation of these plants in the field. Cultures were initiated from field

grown suckers of cv. Basrai. After sterilization, 4-6 mm shoot tips were cultured on MS medium having BAP and IAA. When cultures started growth, detection of BBTv was done by ELISA. Virus free cultures were shifted on multiplication medium. Multiplication medium was MS having different concentrations (0-8 mg/l) of BAP or kinetin alone and in combination with IAA. Moreover liquid and solid phases of the same media combinations were tested to achieve the maximum rate of in vitro multiplication. During the use of liquid medium, cultures were agitated continuously on orbital shaker @ 40 rpm to make sure the uniform availability of nutrients to the explants.

The results showed that multiplication rate was significantly ($p \leq 0.05$) dependent upon cytokinin type, its concentration and type of the medium used. The maximum number of shoots/explant was achieved on liquid MS medium containing 4.0 mg/l BAP. There was no significant difference between liquid and solid medium when kinetin was used, however, kinetin @ 4.0 mg/l or above showed significant difference as compared to control, 1 and 2 mg/l kinetin. When IAA was added in multiplication medium, shoot length increased from 1.3 to 3.9 cm ($p \leq 0.01$) without any increase in number of shoots/explant. In another experiment, efficacy of individual shoot tips towards multiplication was studied. It was observed that during first three subculturings, multiplication rate increased from 1.8 to 3.8, which later on started to decline. Moreover it was observed that explants showing higher rate of multiplication in the beginning continued this behavior in successive subculturings. After multiplication, individual shoots were separated and transferred on rooting media. From the results, it was found that half strength MS medium having IAA@ 1.0 mg/l was the best medium for root induction of invitro raised plants. Later rooting plants were hardened in establishment room, green house and under the shade in open fields. It was observed that the maximum survival was 88.80% in the green house when plants were covered with polyethylene sheet for two weeks. Field trials of tissue culture raised banana plants were conducted in banana growing areas of Sindh, Balochistan and some new locations in Punjab. In the field, tissue culture raised plants grew faster, produced more suckers (41 %) and on the average produced 9.13% more fingers/plant as compared with conventionally propagated plants.

Project No.	P-NIAB/ Biotech/Agr (38)
Project Title:	Characterization of virulent races of blight and wilt pathogens using biological and DNA molecular marker techniques and evaluation of chickpea germplasm for resistance against these diseases
Duration:	3-Years
Date of Initiation:	01.10.2001
Date of Completion:	30.09.2004 (9 months extension up to 30.6.2005)
Final Report Received:	12.11.2005
Location of Scheme:	Nuclear Institute of Agriculture & Biology, Faisalabad.
Principal Investigator:	Dr. Farhat Fatima Jamil, Deputy Chief Scientist
Total Expenditure:	Rs. 7,23,753/-

Main Objectives:

- Characterization of pathotypes/races in blight fungus *Ascochyta rabiei* and *Fusarium oxysporum f. sp. ciceris* through biological pathotyping and genetic analysis.
- Identification of representative set of virulent isolates of *A. rabiei* and *F. oxysporum ciceris* from different areas and screening of chickpea germplasm against them for attaining durable resistance
- Geographical demarcation of *A. rabiei* and *F. oxysporum ciceris* pathotypes in Pakistan to facilitate selection of appropriate host cultivars for different regions and developing possible methods of disease forecasting.

Summary of work done:

Chickpea (*Cicer arietinum* L.) is the most important grain legume in Pakistan and constitutes about 70% of the pulse crops. It occupies more than one million hectares with an average yield of 648 kg/ha. Chickpea is generally grown on small farms in the non-irrigated areas in

all the four provinces of Pakistan, but the major chickpea growing areas lie in Punjab (8,87,600 hectares in 1998-99). It is a major source of protein for the majority of the poorer section of the population. Pakistan is the highest per capita consumer of chickpea in the world. Unfortunately this crop is badly affected by two important and yield limiting diseases i.e. chickpea blight and wilt caused by the fungi *Ascochyta rabiei* and *Fusarium oxysporum* *F. Sp. ciceris* (FOC), respectively. Both diseases are highly influenced by environmental conditions. The first being prevalent in cool and humid environment and the second in warm and dry environment. The most effective and economic way of controlling the disease is through breeding varieties having durable resistance. Since the pathogens are constantly changing in nature and making the resistant cultivars susceptible after sometime, probably due to the appearance of new virulent strains or races of the pathogen, it is necessary to identify the prevalent races in the pathogens if a resistant cultivar with durable resistance is to be evolved. The design of proper breeding strategies, however, requires the unequivocal biological and genetic characterization of these fungi, their diversity, the geographical distribution of the various races in Pakistan and the drift of the races in space and time.

The present project was designed to study the biological pathotyping of different isolates of blight and wilt pathogens on a set of chickpea differentials under controlled environmental conditions and to study their genetic diversity by using different molecular marker techniques. Isolates of the two pathogens were obtained from different chickpea growing areas during annual surveys. Biological pathotyping of isolates and screening of some promising chickpea lines were done against the two pathogens.

Of the 2000 chickpea lines tested in the wilt sick field, 24 lines showing resistance/tolerance against wilt consistently for the last few years, were selected for testing their resistance potential against blight disease under controlled environmental conditions through artificial inoculation. Two standard varieties eM-88 (resistant) and Aug-424 (susceptible) were also included in the experiment for comparison. Six lines/entries (1063, 1057, 1133, 1136, 97477, 97478) were found highly resistant to blight and resistant or tolerant to wilt. These lines are very important and this is a highly valuable genetic material and may be used for resistance breeding or may be treated as promising material to be released as commercial varieties after subjecting them for other agronomic tests.

Isolates of the two pathogens collected from different areas showing different levels of virulence were selected for their DNA fingerprinting. RAPD analysis of 12 isolates of *A. rabiei*, 5 of FOC and 6 chickpea differentials was performed using 16 different 10-mer oligonucleotide primers. The dendrograms of *A. rabiei* and FOC produced from this data showed different levels of genetic relatedness and differences between isolates, which were superimposed by their pathotyping data. A set of 7 genetically different and highly aggressive isolates of *A. rabiei* from different areas was selected for thorough screening of chickpea germplasm against blight for attaining durable resistance. Similarly the dendrogram of FOC showed that all the five isolates were very different and those from Thal area were more aggressive. The dendrogram of chickpea differential set showed that all cultivars were genetically different. These cultivars have also different levels of resistance against blight pathogen.

Project No.	S-KU/Biotech/Med (42)
Project Title:	Antipsychotic drugs blood dyscrasia and hematological safety.
Duration:	2-Years
Date of Initiation:	16.07.2003
Date of Completion:	15.07.2005
Final Report Received:	23.01.2006
Location of Scheme:	University of Karachi, Karachi.
Principal Investigator:	Dr. Nikhat Siddiqui, Professor
Total Expenditure:	Rs. 396,617/-

Main Objectives:

- A biochemical study of the short-term and long-term effect of haloperidol and clozapine in psychiatric patients and in an animal model.
- Estimation of blood parameters including hemoglobin, CBC counts, absolute indices serum iron, TIBC and ferritin.

Summary of work done:

Antipsychotic drugs are frequently used for the treatment of psychotic disorders like schizophrenia, depression etc. to manage acute symptoms and to prevent relapse. Psychotic disorders occurred in 6% of Pakistani population and 1% of the world's population. The side effect profile of traditional or typical neuroleptic agents has been a highly limiting factor during acute and chronic treatment but hematological effects are rare. It is essential for the effective management of drug action to understand the pathogenesis of hematological dyscrasias. A potential cause of serious toxicity is the infrequent occurrence of hematological side effects due to the neuroleptic drug.

The proposed study was designed to investigate the hematological side effect profile after chronic (21 days) administration of typical (Haloperidol) and atypical (Clozapine) antipsychotic drugs (both as commercially available form and purified form) in an animal model (rat) and the human schizophrenic patients.

Typical antipsychotic drug like haloperidol (a butyrophenone), used to control the positive symptoms of schizophrenia through the blockade of limbic D₂ receptors targeted by hyperactive mesolimbic dopaminergic pathways. While the atypical antipsychotic Clozapine (a dibenzodiazepine, 8-Chloro-11-(4-methyl-1-piperazinyl)-5H-dibenzodiazepine), has manifested only modest affinity for D₂ receptors, effective in neuroleptic-resistant patients, do not elicit of tardive dyskinesia though it possess a benign extrapyramidal potential thus improving negative symptoms.

The sequential analysis based on the morphological and biochemical assessment suggests that the type of microcytic-hypochromic anemia is iron deficiency anemia (IDA). Because iron studies cannot be accurately assessed on the basis of serum ferritin, serum iron or RBCs features alone. These parameters appear to be dependent on each other and a strong association can be identified. The severity of iron deficiency anemia is more obvious in the purified powder as compared to commercially available injection treatment. The mechanism of the interaction of haloperidol and iron is yet to be investigated. Similar results were obtained in case of schizophrenic patients receiving haloperidol for more than 12 weeks.

Unlike classic neuroleptic agents, Clozapine is not associated with the development of acute extrapyramidal symptoms or tardive dyskinesia. Most side effects associated with Clozapine are typical of anti psychotics in general, and typically benign, tolerable, and manageable in particular. The real problem of drug-induced neutrophil cytotoxicity is raised by the use of the atypical antipsychotic drug Clozapine, which has been prescribed restrictively due to the incidence of drug-induced agranulocytosis in 1-2% of patients. The exact mechanism of this adverse effect is not yet known. Many of these side effects of Clozapine are observed early after treatment onset and are greatly reduced by dose adjustment.

Neutrophil cytotoxicity was observed in an animal model and is more severely observed in schizophrenic patients receiving Clozapine treatment. The possible hypothesis of the mechanism of drug-induced cytotoxicity is the involvement of reactive metabolites, which are formed by, or in close proximity to affect the blood cells. However, the therapeutic dosage range and the mechanism of Clozapine-induced hematotoxicity are probably not due to direct toxicity of Clozapine to the blood cells or their precursors. The mechanism by which metabolites of Clozapine causes PMN toxicity still requires further investigation.

The data raised concerns about hematological safety and the potential mechanism of the drug-induced blood dyscrasias related to the chronic treatment of two different antipsychotic drugs, haloperidol and Clozapine, in an animal model and in the schizophrenic patients.

1.1.2. Scientific Publications produced through PSF Funded Projects

One of the main achievements and usefulness of any research is the publication of its results in scientific journals. Based upon the results of completed projects, 01 research paper (from non-development budget) was published as under:

<u>Project No.</u>	<u>Publication</u>
Biotech/S-KU/Med (42)	Afshan, W., Nikhat, S., Rubina, G., and Mehdi A. M. 2004. Haloperidol induced variations in hematological indices. Pakistan Journal of Medical Sciences, 20(3): 197-200.

1.1.3. Research Projects Funded through Development Budget

The development project entitled “Funding of Scientific and Technological Research in Universities and other R&D organizations” was sanctioned by DDWP on April 25, 2001 at a total cost of Rs.39.00 million over a period of three years and was initiated on October 01, 2001. The main objective of the project was to strengthen the scientific and technological research activities in the Universities and other R&D Organizations by providing them more funds. Under this PSDP project, 64 research projects were sanctioned. The PSDP project after extension was completed on 30-6-2007 and the accounts were closed. However, the research projects funded at various institutions were still on-going as reported below.

a. On-going projects

During the year, 37 different progress reports (3rd semi-annual, annual and final) were received. The PSF relevant staff scrutinized the semi-annual reports, whereas the annual and final reports, after initial scrutiny, were sent for evaluation to the subject experts. An amount of Rs. 4.870 million was released on account of due installments of on-going projects. A list of the semi-annual, annual and final reports received during report period is given at **Annexure-III**.

b. Completed Projects

During the year 03 projects were completed. The subject experts evaluated the final reports of these projects which were subsequently placed before the relevant PSF Technical Committees for consideration and adoption. A list of the completed projects followed by their summaries is given below:

i. List of Completed Projects:

S.No.	Project No.	Project Title.
1	R&D/S-HEJ/ Biotech (93)	The use of biochemical and DNA finger printing to evaluate the genetic stability of banana plants produced via in-vitro culture.
2	R&D/P-NIBGE/ Biotech (168)	Development of replicase mediated CLCUD cotton leaf curl disease resistance in cotton.

ii. Summaries of Completed Projects:

Project No.	R&D/S-HEJ/ Biotech (93)
Project Title:	The use of biochemical and DNA finger printing to evaluate the genetic stability of banana plants produced via in-vitro culture.
Duration:	2-Years
Date of Initiation:	01.10.2003
Date of Completion:	31.03.2006 (6-months extension)
Final Report Received:	10.07.2006
Location of Scheme:	Plant Tissue Culture Lab., HEJ Research Institute of Chemistry, Karachi.
Principal Investigator:	Dr. Saifullah Khan, Senior Scientific Officer
Total Expenditure:	Rs.728,063/-
Main Objectives:	<ul style="list-style-type: none"> ▪ Identification of suitable markers system for quality control measures to evaluate genetic stability of plants regenerated using culture techniques. ▪ Identification of the micro propagation system which can produce genetically stable plant.

Summary of work done:

Banana, *Musa sp.* and its byproducts are the most important food constituents for the people all over the world. That is why, it has been considered as the most important cash crop of tropical and subtropical areas. It was in 1988 that Pakistan had to face the severe epidemic of Banana Bunchy Top Virus Disease (BBTV). Including BBTV, there are many problems of fungal and bacterial diseases, pests and environmental factors that are affecting the production of this food crop. To overcome the spreading diseases like BBTV, Black Sigatoka and Fusarium wilt, common traditional methods of propagation must be discouraged, which is the major cause of the dissemination of diseases and pests.

Plant Tissue Culture is the modern biotechnological tool that can prevent the dissemination of diseases and pests through its aseptic techniques. Furthermore, proper check on molecular level using molecular markers has ensured strict quality control for a desired clone production. This technique has enabled us to produce tremendous quantities of banana plantlets in a limited area and limited time under proper condition, once the *in vitro* culture of desired clone is initiated aseptically. Hence, the integration of Biotechnology into banana improvement program can be the right tool, at appropriate time to not only save this crop loss, but to enhance the quality, quantity and foreign exchange. The current research project has successfully enabled us to identify and develop the optimum micro propagation system, which can produce genetically stable plants. This research study was conducted to develop a protocol whereby a BBTV indexing regime could be established on a routine basis involving development of an economically viable, low cost, large scale multiplication programme employing *in vitro* technology to replenish the infected supplies of infected farms with virus indexed clean banana plants, and to monitor the genetic uniformity of the micro propagated plants, so that the growers receive true type, genetically uniform plants on an affordable and periodic basis. A virus indexing protocol employing ELISA was successfully established for a routine basis of monitoring large samples for the presence of BBTV. During the course of this study, a low cost tissue culture approach was adopted, using locally available chemicals and equipment. It was determined that media supplemented with KIN (1 mg/L) and BAP (0.05 mg/L) gave a maximum yield of shoot proliferation of up to 10 shoots per explants produced in a 4 week period. Likewise, it was experimentally determined that maximum rooting *in vitro* was observed in a media supplemented with IEA (1.00 mg/L), followed by acclimatization and distribution to the local growers.

Optimum marker systems were developed, and it was observed that microsatellites could be employed for a routine laboratory assay in order to check a large number of samples for the genetic stability, in a manner that is fast, reliable and efficient.

Project No.

R&D/P-NIBGE/ Biotech (168)

Project Title:

Development of replicase mediated cotton leaf curl disease (CLCuD) resistance in cotton.

Duration:

3-Years

Date of Initiation: 01.08.2003
Date of Completion: 31.07.2006
Final Report Received: 20.10.2006
Location of Scheme: NIBGE, Faisalabad.
Principal Investigator: Ms. Shaheen Asad,
Senior Scientific Officer
Total Expenditure: Rs.9,13,196/-
Main Objectives:

- To construct plant expression vectors containing the DNA sequence having truncated replicase gene of cotton leaf curl virus DNA.
- Transformation of cotton (Coker-312) with these constructs by Agrobacterium.
- Molecular analysis of transgene in putative transformation.
- Biological analysis of transgenic plants for virus resistance (containment study).

Summary of the work done:

Cotton Leaf Curl Disease (CLCuD) is caused by a complex of a geminiviruses, cotton leaf curl virus (CLCuV), and a satellite DNA component, DNA p. The disease has now become a persistent threat to sustainable cotton production in Pakistan. To overcome this problem, breeders have tried to develop resistant/tolerant varieties but due to the lack of diversity in gene pool, the success has been limited. In the present scenario, genetic engineering seems to be a valuable tool for developing virus resistant transgenic plants. The rep gene (ACI) is an attractive target for engineering CLCuD resistance in cotton since it is a multifunctional gene consisting of different domains. These different domains present at N-terminal and C-terminal of rep are required for DNA binding, oligomerization and NTP activity making the use of replicase gene, in the mutated or truncated form, most appropriate to elicit pathogen derived virus resistance in transgenic plants.

The present study utilizes the truncated versions of rep gene. About 107 independent kanamycin resistant calli (57 of 5'Δ AC I-p482 and 37 of 3'Δ AC I-p482) were obtained from

cotton hypocotyls explants transformed with *Agrobacterium*. Out of 107 kanamycin resistant calli, 45 produced embryogenesis and plantlets of 40 independent events were transferred to soil for getting progeny. Molecular analysis indicated that transgenes are present in 1-3 copies/genome and expressing with different levels in independent plants. Four transgenic lines either of the construct 5'Δ AC I-p482 and 3'Δ AC I-p482 were selected for virus resistance assay. About 50 T1 plants of each line along with the control were exposed to viruliferous whiteflies for a period of two months. Plants of transgenic lines showed variable behavior (24-100%) towards CLCuD infection as compared to control (100%).

Project No.	PSF/ILG/021/03
Project Title:	The development of mutant strain of <i>Aspergillus niger</i> for citric acid fermentation.
Duration:	1-Year
Date of Initiation:	01.07.2004
Date of Completion:	30.06.2005 (extended up to 30.6.2006)
Final Report Received:	22.02.2007
Location of Scheme:	Govt. College University, Lahore
Principal Investigator:	Dr. Ikram-ul-Haq, Professor
Total Expenditure:	Rs.398,987/-
Main Objectives:	<ul style="list-style-type: none">• To develop the strain of <i>Aspergillus niger</i> after isolation and screening from local habitats and its mutation by UV/Chemical treatment for maximum conversion of sugar into citric acid.

Summary of the work done:

One hundred and ninety (190) strains of *Aspergillus niger* were isolated from soil samples collected from different areas by serial dilution method. These strains were qualitatively screened for citric acid production in the petriplates on Czapek-Dox agar medium containing bromocresol green dye as an indicator. One hundred and twenty nine (129) strains that produced yellowish zones (0.5-1.5 cm, dia.) due to acid formation were selected for further screening by submerged fermentation. Among all the strains, *A. niger* GCBT -117 gave the

highest citric acid productivity (15.2 ± 0.14 g/l). The fermentation was carried out using 25 ml of cane molasses medium (sugar 15.0 %, pH 6.0, free ferrocyanide 200 ppm) in 250 ml Erlenmeyer flasks. The flasks were rotated in a shaking incubator (200 rpm) at 30°C for 168 hrs.

After optimizing the cultural conditions, the isolate GCBT -117 gave 17.19 ± 0.71 g/l citric acid and hence subjected to mutagenic treatment for improvement. Both the conidial suspension and vegetative mycelia (6-24 h old) of strain GCBT-1171 were used for random mutagenesis. After exposure to the UV radiation, 54 mutants of GCBT-117 were picked up and tested for citric acid biosynthesis. However, the *A. niger* mutant strain designated as UV -50 gave maximum citric acid production i.e., 27.91 ± 0.19 g/l. The mutant was further improved after ethyl methane sulphonate (EMS, 50-350 mM) treatment for different time intervals (5-30 min). Seventy two mutants were selected and evaluated for citric acid production. The best mutant strain *A. niger* Ems-66 was obtained after 350mM EMS treatment for 15 min which gave 1.68 fold higher citric acid production (46.81 ± 1.33 g/l) than the mutant UV-50. This mutant was further subjected to nitrous acid for 2-12 min. Among the 41 nitrous acid mutants, mutant strain NA-32 gave the maximum citric acid production (50.3 ± 0.58 g/l). This mutant was isolated after an exposure to nitrous acid for 10 min. Thus, the mutant *A. niger* NA-32 showed an over all improvement of 2.93 fold in the citric acid production over that of wild culture *A. niger* GCBT-117.

The rate of citric acid fermentation by the mutant strain *Aspergillus niger* NA-32, in stirred fermentor, was investigated and the maximum production (45.07 ± 2.12 g/l) was achieved 144 h after incubation. Attempts were also made to improve the best mutant strain (NA-32) by gamma radiation, UV radiation, chemical mutagens (EMS and nitrous acid) and alternative treatment of UV radiation and chemical mutagens but no mutant with improved citric acid production rate was obtained.

c. Higher Degrees Earned through PSF Supported Projects (Development Budget)

One of the major goals of the Foundation is the training of scientific human resource in the country. This in turn would result in strengthening of R&D infrastructure of various scientific organizations. To achieve this goal, the PSF has been developing scientific manpower through its research projects. Research Associates employed in the projects have to register for higher degrees. During the report period two (02) Research Associates were enrolled for Ph.D. and

three (03) were awarded M.Phil. and one (01) M.Sc. (Hons) degrees. List of the scholars who obtained/enrolled for the degrees is given below:

S.No.	Project No.	Name of Researcher	Degree awarded
1.	R&D/S-HEJ/ Biotech (93)	Ms. Bushra Ahmed Saeed	Ph.D (enrolled)
2.	R&D/P-NIBGE/ Biotech (168)	Mr. Jamil Ahmad Hashmi	Ph.D (enrolled)
		Ms. Uzma Hameed	M.Phil
3.	PSF/ILG/021/03	Mr. Javed Iqbal	M.Phil
		Mr. Wajid Javed	M.Phil
		Ms. Sadia Bashir	M.Sc.

1.1.4 R & D Industry Programme

R & D Industry Programme was started in 2003 with the aim to establish linkages among Academia, R&D organizations and Industrial community to pave the way to achieve socio-economic development. Under the Programme 16 projects were funded through Non-Development as well as Development funds and specific progress is reported in relevant sections above. However, the overall progress made under this programme during 2006-07 is as under:

During the year, three projects were on going and three projects were completed from Development Budget. The final technical reports of three projects have been submitted by Principal Investigators (P.I.s) and have been evaluated by the subject experts.

Project entitled “Disbondment of Epoxy Coating and Integrity of Gas Transmission Pipeline” made good progress. This joint collaborative research project is equally funded by PSF and SSGC to the tune of Rs 3.68 million and is a role model of Applied Research and Industrial Linkages ultimately leading to indigenous technology development. Similarly under another project, a pilot plant for processing green tea has been installed at Shinkiari, District Mansehra, NWFP. In the first year of the project, 220 kg of processed green tea has been sold to M/S Tapal Tea (Pvt) Ltd. It is expected that about 1000 kg green tea will be processed

and sold to M/S Tapal Tea (Pvt) Ltd in 2007-08. This project was visited on site on December 16, 2006 by senior officers of PSF and the progress was found as satisfactory.

It is hoped that during the next year, successful indigenous technologies will be developed from this programme which can serve as a good example of self dependency.

1.1.5 Establishment of Natural Science Linkage Programme (NSLP)

The NSLP Endowment Fund has been established with the grant of Rs.498.910 million received from US Government under PL-480 Programme.

The primary goals of this programme are

- a. To increase contacts and collaboration among natural scientists and institutions of the two countries in the field of biological research, leading to development and higher learning.
- b. To provide researchers and institutions with opportunities to exchange information, ideas, skills and techniques.
- c. To enhance the Agricultural production of Pakistan for the benefit of farmers and for acquiring food security.

First installment of the Fund, amounting to Rs.249.55 million, being 50% of the total grant, was received by PSF from the M/o Finance during the year 2005-06, which was deposited in the Endowment Fund account. The remaining 50% was paid to PSF in October 2006. This was also invested in the Endowment Fund account. Profit from the Endowment Fund is being utilized for funding of research projects, aimed at enhancement of agricultural production and food security in Pakistan.

Progress made during the year is summarized below:

- i. A meeting of the PSF Technical Committee on Agriculture Sciences was held to prioritize research areas for funding under the Endowment Fund. The list of priority areas identified by the Technical Committee is given below:

Sr. No.	Theme	Areas of Research
1.	Collection, characterization and evaluation of genetic material	• Agriculture biotechnology (bio-technology, micro-biology and genetic engineering etc.)
2.	Crop protection	• Pest management

- Host resistance mechanisms
- Biological control
- Use of pheromones, attractants, repellents, endophytes in crop protection etc.
- Management of invasive species
- 3. Post harvest
 - Food storage technology
 - Food processing and preservation
- 4. Natural resource management
 - Recycling of bi-products
 - Biophysics
 - Biochemistry
 - Biology
 - Waste management in rural communities
 - Environmental sciences
 - Agro-biodiversity
- 5. Plant and animal improvement
 - Stress biology
 - Yield and quality improvement
 - Identification and control of animal and plant diseases and insects
 - Dry-land/sustainable agriculture production system
- 6. Farm mechanization
 - Farm machinery
 - Irrigation technology
- 7. Bio-informatics
 - Application of information technology in agriculture

ii. The programme was advertised in the combined issues of six (6) National Daily Newspapers (3-English and 3-Urdu) and five (5) local Newspapers on 21st December 2006. Project proposals were invited from Scientists for submission on twice a year basis in the months of January and August each year.

iii. In January 2007, 42 projects were received, which were sent for evaluation to experts. Each project is required to be evaluated by two Pakistani Scientists and one US Scientist.

iv. Twenty six (26) projects were peer reviewed by experts. These projects will be submitted to the Technical Committee for their recommendations.

1.2. SCIENCE PROMOTION

1.2.1 International Liaison

a. Visits of Foreign Scientists to Pakistan Science Foundation

Five (5) teams of scientists from United States, Germany, France, China and Malaysia visited PSF and discussed matters of mutual interest with PSF scientists.

1.2.2 Activities funded from Non-Development Budget

a. Financial Assistance for holding of Conferences, Seminars and Workshops

The Foundation provides partial financial assistance to universities and scientific organizations for holding of national and international scientific conferences, seminars and workshops. During the report period an amount of Rs. 0.805 million was paid to 18 organizations listed at **Annexure-VI** for holding of the Conferences Seminars, Workshops etc.

b. Publication of Scientific Journals

The Foundation provides financial assistance to scientific organizations for publication of journals. During the year under report, an amount of **Rs. 0.315 million** was utilized for publication of the following eight (8) scientific journals.

S. #	Title of the journal	Name of Organization	Amount paid (Rs.)
1.	Pakistan Veterinary Journal.	Faculty of Veterinary Sciences, University of Agriculture, Faisalabad.	35,000/-
2.	Pakistan Oral and Dental Journal.	Khyber Medical College, Peshawar.	35,000/-
3.	Pakistan Journal of Pharmaceutical Sciences.	University of Karachi, Karachi.	50,000/-
4.	Journal of Natural Science & Mathematics.	GC University, Lahore.	35,000/-
5.	Pakistan Journal of	Sind Agriculture	35,000/-

	Agricultural Engineering & Veterinary Sciences.	University, Tandojam.	
6.	Pak Journal of Arid Agriculture.	University of Arid Agriculture, Rawalpindi.	35,000/-
7.	Journal Geographic.	Pakistan Geographical Association, Islamabad.	40,000/-
8.	Farming Outlook.	Farming Outlook, Islamabad.	50,000/-
		Total	315,000/-

c. Awards and Fellowships

The Foundation, under its Awards and Fellowships programme, granted fellowships to the following two (2) M. Phil/Ph. D Students @ Rs. 6,000/- per month.

Sr. #	Name and address of Scholar	Amount paid
1.	Mr. Javed Iqbal, Ph.D. Student Department of Soil Sciences Faculty of Agriculture Gomal University D.I. Khan.	Rs. 36,000/-
2.	Mr. Shahan Zeb Khan, M. Phil student Department of Chemistry Quaid-i-Azam University Islamabad	Rs. 36,000/-
	Total	Rs. 72,000/-

1.2.3 Activities funded from Development Funds

During the report period, following development projects remained under implementation:

1. Financial Support to Scientific Societies in Pakistan
2. Participation of Scientists and Technologists in International Conferences, Seminars and Workshops (Phase II).
3. Automation of PSF Research Support Programme and other Activities.

The progress made under each project is summarized below:

a. Financial Support to Scientific Societies in Pakistan

Pakistan Science Foundation provides financial assistance to Scientific Societies for carrying out their scientific activities specified in their charters for the development of Science and Technology in Pakistan. During 2006-07, funds amounting to Rs. 9.50 million were paid to 16 scientific societies for the purpose. The cumulative achievements of the Societies include holding of 23 national and international science conferences/seminars/workshops, publication of 36 volumes of 11 scientific journals, 8 volumes of 5 newsletters/pamphlets and payment of linkages fee to 3 scientific societies. The list of societies which received the grant is given at **Annex-IV**.

The development project, which was initiated on 18th January 2001, has been completed on 30th June 2007 at a total cost of Rs. 39.0 million. PC-I for Phase II of the project at a total cost of Rs.36.00 million for a period of three years has been submitted for Govt. approval.

b. Participation of Scientists and Technologists in International Conferences, Seminars, Workshops and Training Abroad (Phase-II)

Pakistan Science Foundation provides financial assistance to Scientists and Technologists for their participation and presentation of research papers in International conferences, seminars, workshops and short term training courses abroad. The main objective of the activity is to provide an opportunity to Pakistani Scientists to interact with their counterpart scientists abroad and learn about the latest research trends and techniques to adopt the same in their own labs for the development of Science and Technology in Pakistan. Previously, the grants were provided from the non-development budget. However, due to in-adequate allocation for this activity in the non-development budget, a PC-I was submitted to MoST in the year 2000 for getting the development funds under PSDP. The project was approved at a total cost of Rs. 17.0 million for five years. The project was completed in June 2006.

On successful completion of Phase-I, PC-I for Phase-II of the project was submitted to MoST. The project was approved by the DDWP in its meeting held on 26.08.2006 at a total cost of Rs. 36.08 million for a period of 3 years. The project was initiated in February 2007.

During the report period, an amount of Rs 3.50 million was spent on payment of travel grants to twenty four (24) Scientists, advertisement charges, staff salaries and purchase of office equipment & stationery etc.

The list of Scientists who received grants during the year is given at **Annex-V**

c. Automation of PSF Research Support Programme and other Activities

The project was launched to strengthen the Foundation in terms of I.T equipments, manpower and infrastructure by establishing Local Area Network at PSF and Wide Area Network between PSF, PMNH and PASTIC through COMSATS Internet services. The project was approved by the DDWP in its meeting held on 27.12.2006 for a period of 18 months at a total cost of Rs.19.081 million. The main objectives of the project are:

- (i) To establish Database and Local Areas Network (LAN) within PSF to enable the officers to share information regarding research projects and other activities for quick and timely processing of requests.
- (ii) To connect PSF through Web to the outside world to facilitate the scientists/researchers to get in touch with the Foundation round the clock and get updated information regarding scientific activities supported by the Foundation.
- (iii) To establish Wide Area Network (WAN) between PSF, PMNH and PASTIC through COMSATS Internet Services for timely retrieval and quick flow of information between them.

The project, which was initiated in February 2007, would be completed in August 2008. Under the project, computers, servers, office equipment and software have been purchased. Project staff including System/Database Administrator, Network Administrator, Data Coordinator, Technical Assistant and two Data Entry operators as approved in the PC-I have joined the project. An amount of Rs.5.00 million was utilized on the purchase of I.T equipment and staff salaries. Preliminary surveys for establishment of Local Area Network (LAN), Wide Area Network (WAN) and development of database have been conducted and the procurement of equipment for LAN and WAN and development of software are in progress.

1.3 SCIENCE POPULARIZATION

Popularization of Science is one of the statutory functions of Pakistan Science Foundation. The Foundation is engaged in various science popularization activities at the national level with the aim of increasing awareness of science education in the society. In order to achieve this objective the Foundation has initiated a number of programs including science exhibitions, fairs, science film shows, popular science lectures, science quiz competitions, science essay and poster contests, establishing of science centres/corners, strengthening of laboratories of high schools etc. The programmes undertaken during the year under report are briefly highlighted below:

a. Science Caravans (Mobile Science Exhibition)

Science Caravan is a Mobile Science Exhibition that has been designed to increase public awareness about science and to motivate the younger generation of the country towards study of science. Through Mobile Science Exhibition the people living in rural/backward areas of the country are exposed to some of the most fascinating scientific and technical developments of the modern world. All narrations are bilingual (Urdu and English) and accompanied with simple illustrations. Microscopes, computers, laser holograms and working models reflecting various phenomena of physics, chemistry, mathematics and biology through simple exhibits are the main components of Caravan Exhibitions. At present nine Science Caravan Units are in operation. Eight units are stationed in the four Provinces (two each) and one is stationed at Islamabad. Keeping in view the demand for Science Caravan Exhibitions, the Foundation has prepared and submitted a new PC-I to the Ministry of Science & Technology for preparation of six additional Science Caravans.

The Caravan Units continued their activities throughout the report period and organized 30 Caravan Exhibitions for 377 days in various schools countrywide. More than 212,356 students of 405 Schools visited these exhibitions. Summary of exhibitions is given below, while the details are in **Annexure-VII**.

SUMMARY OF EXHIBITIONS BY PSF SCIENCE CARAVANS

Province	Days	Schools	Students and Visitors
Federal	90	58	131,576
Sindh	128	181	45,845
Punjab	68	74	20,750
NWFP	88	90	28,000
Balochistan	3	2	635
Total	377	405	226,806

b. Donation of Scientific Literature to High Schools

As its regular Programme, the Foundation donates scientific books and magazines to high schools particularly in rural areas. During the year, 12000 copies of Monthly Magazine “Global Science” were donated to 1000 high schools and more than 10,000 Brochures and Posters were provided to various high schools and other organizations of the country.

c. Promotion of Scientific Books

With a view to encourage and promote scientific book reading and writing, PSF purchases books/magazines on various scientific themes and distributes free of cost to educational institutions and R&D organizations. It also provides financial support to the authors for publishing their books. During the year, 150 copies of the book entitled “Islam: The Knowledge Based Religion” written by Dr. M. M. Qureshi, Secretary, Pakistan Association for History and Philosophy of Science, Islamabad were purchased and distributed to schools of the Country.

d. 16th Intra & Inter Board Science Poster and Essay Competitions

Science Essay and Poster Competitions are also regular activities of the Foundation. PSF in collaboration with Boards of Intermediate & Secondary Education (BISE) of the country

organizes the Competitions between the students of high schools of the country. This year 16th Intra and Inter Board Science Poster and Essay Competitions on the Themes “Science and Society” and “Allergy” respectively were organized. Sixteen Boards of Education out of 22 participated in the Science Essay and Poster Competitions. An amount of Rs.190,500/- was released to the winner students of Poster competitions, whereas Rs.287,500/- were paid to the winner students of Essay Competitions of Intra and Inter Board levels (**Annexure-VIII**).

e. Financial Assistance for Popularization of Science

In addition to its own Science Popularization activities, the Foundation also provides financial assistance to other institutions/schools for their science propagation activities and purchase of Lab Equipment. In this respect, a number of grants were provided to various institutions as under.

Sr.No	Name of Institution	Purpose/Activity	Amount
1.	National Museum of Science and Technology, Lahore	19th Annual Science Competitions 2006 holding of Science Quiz, Science innovation and Essay Competition.	Rs.30,000/-
2.	Institute of Space Technology, SUPARCO, Islamabad	Prizes given to the winner students of poster contest in connection with celebrations of World Space Week.	Rs.25,000/-
3.	Government Post Graduate Jehanzeb College, Saidu Sharif, Swat	Purchase of Computer/lab Equipment.	Rs.25,000/-
4.	PASTIC National Centre, Islamabad	Workshop on “Data Warehousing and Data Mining” held on 20th -21st February 2007 at PSF Auditorium.	Rs.65,000/-
5.	Government Higher Secondary School, Fatehpur, Distt. Swat	Purchase of Lab. Equipment/Computer.	Rs.25,000/-
6.	Govt. High School, Taga, District, Dadu	Purchase of Lab apparatus and equipments.	Rs.50,000/-
7.	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology (GIKI), Topi	8th All Pakistan Science Fair, 2007.	Rs.40,000/-

8.	College of Electrical & Mechanical Engineering, NUST, Rawalpindi	6th All Pakistan Inter College/University Software Competition (COMPPEC 2007).	Rs.50,000/-
9.	Govt. Higher Secondary School, Dina, Jhelum	Purchase of Computer Sets, Printers, scanners and chemicals.	Rs.95,000/-
10.	Bloomfield Hall School, Sahiwal	Purchase of Lab. Equipment.	Rs.50,000/-
11.	Federal Directorate of Education, Islamabad	In connection with "Islamabad Mathematics Olympiad-2007" for purchase of Computers to be given as prizes to the winners of the Olympiad.	Rs.210,000/-
12.	Public School and College, Sir Syed Town, North Karachi, Karachi	To meet the expenses of the prizes to be given to the winner students of various competitions of "School Science Fair".	Rs.30,000/-

f. Symposiums/Seminars

In connection with 300th Anniversary of the great Mathematician 'Leonhard Euler' a Symposium was jointly organized by PSF and Pakistan Mathematical Society on 12th June 2007 at PSF Auditorium.

Leonhard Euler (1707-1783) was a pioneering Swiss mathematician and physicist. He worked in geometry, calculus, topology, trigonometry, algebra and number theory, not to mention continuum physics, lunar theory and other areas of physics. He wrote his first paper at the age of 19 years. His work has tremendous effect on the development of mathematics. Mr. Konstantin Obolensky, Deputy Head of Mission, Embassy of Switzerland was the Chief Guest at this occasion. Eminent Scientists; Prof. Dr. M. Riaz-ud-Din, Director, National Centre for Physics, Prof. Dr. Qaiser Mushtaq, President, Pakistan Mathematical Society, Prof. Dr. M. Sarwar Kamran and Dr. Khalid Rashid delivered the lectures. At the end Dr. N. M. Butt, Chairman, PSF delivered his lecture and vote of thanks.

g. Independence Day Celebrations

To celebrate 60th Independence Day of Pakistan, PSF organized “Students Convention” and “Science Caravan Exhibition” at PSF, Auditorium. Prof. Dr. M. Qasim Jan, *S.I., T.I.*, Vice Chancellor, Quaid-i-Azam, University, Islamabad was the chief guest on this occasion.

Dr. N.M. Butt (*S.I.*), Chairman Pakistan Science Foundation demonstrated scientific concepts and processes and also highlighted the importance of Nano Science and Technology. Mr. Zia Ullah Khan Business Development Manager- North, The Educators and Mrs. Almas Khanum Academic Co-ordinator of “The Educators School System” delivered speeches on the role of science and technology in the development of a country. Two students of the Educators School System, Mr. Ahmad Nawaz, of Class 8 and Ms. Palwasha Faizan, of Class 9 delivered speeches on “Importance of Science Education” and “Female Education in Pakistan” respectively. At the end, Dr. S. Azhar Hasan, Member Science, PSF presented vote of thanks.

Coinciding with the event, Science Caravan’s Unit arranged “Science Exhibition” within PSF premises, for motivation and awareness of visiting students. Commemorative shields were also presented to the speakers of this event.

h. Seminar on “Earth Quake Resistant Materials”

PSF in collaboration with Pakistan Materials Research Society (PMRS) and University of Azad Jammu & Kashmir (AJ&K) organized an international Seminar on “Earthquake-Resistant Materials” at Hotel Margalla, Islamabad on Sep. 11-12, 2006. A number of national and international experts/speakers gave talks on devastation caused by earthquakes, design of earthquake resistant structures and the types of materials that are safe for construction in earthquake areas. The seminar was inaugurated by Dr. Ishfaq Ahmad, Special Advisor to the Prime Minister of Pakistan. It was concluded with the warning of likely threat of another earthquake on the basis of geological study of the area. It was also mentioned that the underground activities have been recorded, as the fault line is active in Balakot. Bagh and many other parts of NWFP and northern Punjab. The recommendations were prepared for onward submission to relevant public sector departments for implementation.

i. World Science Day for Peace & Development (WSDPD)

United Nations Educational, Scientific and Cultural Organization (UNESCO) during the General Conference at its 31st session (2001) proclaimed November 10 each year as “World Science Day for Peace and development (WSDPD)”. Pakistan Science Foundation in collaboration with UNESCO, organized a Convention of Scientists on November 20, 2006 at Hotel Holiday Inn, Islamabad. Chief Guest, Dr. Ishfaq Ahmad, *N.I., H.I., S.I.*, Special Advisor to the Prime Minister addressed the audience. He said that Government has allocated billions of rupees to S&T Sector and the scientific community should come forward and work together with the industrialists for the economic and industrial development of the Country. Engr. Parvez Butt, Secretary, MoST , Dr. Mujahid Kamran and Mr. Jorge Sequeira also addressed the audience. Dr. N. M. Butt, Chairman, Pakistan Science Foundation, speaking on the occasion emphasized on the importance of Science & Technology for the betterment of mankind. The position holder students of speech contest also expressed their views on Science for Peace and Development. Medals and certificates were awarded to the winner students of ISIE, 15th Inter Board Science Poster and Essay Competitions and Speech Competition.

A live talk show on PTV World “News Morning” was arranged on the occasion of (WSDPD) in which Dr. S. Azhar Hasan, Member Science, PSF, Dr. M. Qasim Jan, Vice Chancellor, Quaid-i-Azam University, Islamabad and Dr. Anwar Nasim, Advisor, COMSTECH, Islamabad highlighted the importance of Science & Technology for peace and development.

A Speech Competition was also organized related to the Day on the topic “Science for Peace and Development” among the students of Matric/O level at the PSF Auditorium, Islamabad on 10-11-2006. Dr. Shahzad A. Mufti, Advisor, COMSATS, Islamabad was the Chief Guest. Dr. S. Azhar Hasan, Member Science, PSF welcomed the Chief Guest and highlighted the importance of Science & Technology for development of the country. Twenty three students of Islamabad and Rawalpindi participated in the speech competition. Ms. Zarina Tariq, Beaconhouse School, Islamabad, Mr. Rameez Anwar, IMCB, F-8/2, Islamabad and Ms. Fatima Khalid, OPF Girls College, Islamabad got 1st, 2nd and 3rd position respectively. The

Federal Caravan Unit arranged “Science Caravan Exhibition” for the interest and benefit/awareness of students on the same day at the office of the PSF, Islamabad.

j. UNESCO Project: “Breaking the Poverty Cycle of Women”

PSF in collaboration with MoST and UNESCO organized 3rd International Meeting of the Sub-Regional Network on Scientific Education and Popularization of Science on 6th -7th Feb, 2007 at PSF Auditorium, Islamabad with International Members and Partner NGOs. The reading material prepared by PSF (first draft) like booklets on Mother Child Health Care, Hepatitis, HIV/Aids, Small Income Generating Projects and Simple Scientific Experiments were presented to the participants. The material was thoroughly discussed and some changes were suggested for improvement of the material.

k. 2nd Meeting of Nobel Laureates with Pakistani Students/Young Scholars in Pakistan

The 2nd Meeting of Nobel Laureates with Pakistani Students/Young Scholars was organized by Pakistan Science Foundation (PSF) in collaboration with Pakistan Atomic Energy Commission (PAEC), Higher Education Commission (HEC), Ministry of Science & Technology (MoST) and Pakistan Academy of Sciences (PAS). Dr. N.M. Butt, Chairman, PSF and the Representative in Pakistan, Council for Lindau Nobel Laureates Meetings, was the Chief Organizer. This five day meeting was held from 27-31 March, 2007 at Islamabad and 1-2 April, 2007 at Lahore.

The purpose of the Meeting was to inspire and motivate students, young scientists and research scholars of Pakistan for developing scientific culture and to broaden the outreach of the country’s scientific community. Three Nobel Prize Winners viz., Prof. Klaus von Klitzing, Germany (Physics, 1985), Prof. Douglas Osheroff, USA (Physics, 1996) and Prof. Peter Agre, USA (Chemistry, 2003) participated in this Meeting.

Prof. Dr. Atta-ur-Rahman, Chairman, HEC, while addressing the gathering expressed his gratitude to the Nobel Laureates for their visit to Pakistan and sparing their time for

interaction with Pakistani students and young scholars. He commended the efforts of Dr. N. M. Butt for bringing these top most scientists of the world to Pakistan. He said that students are the wealth of the country. Therefore we should invest on our students. Educational development is the real development of a nation.

Others who expressed their views on the occasion included Engineer Parvez Butt, Prof. Klaus von Klitzing and Prof. Douglas Osheroff. Dr. N. M. Butt described the history of the participation of Pakistani students/young researchers in Annual Meetings of Nobel Laureates in Lindau, Germany. He informed that these meetings are aimed at creation of knowledge through interaction. He said it is not possible to send a large number of students to Germany due to high expenditure; therefore this initiative was taken to hold meetings in Pakistan on the same pattern as in Lindau to benefit a large number of students.

The scientific session started just after the inauguration. About 300 scientists, researchers, young scholars and policy makers participated in this session and interacted with the Laureates. Prof. Klaus von Klitzing delivered a lecture on "Metrology: The Science of Measurement". His talk was focused on development of three basic units of measurement. In the afternoon, an informal meeting of Nobel Laureates with senior scientists of Pakistan was held focusing on development of science culture in the country.

The morning session on the second day of the Meeting was devoted to Laureates-students interaction. About 300 students of intermediate and A-level from different schools and colleges of Rawalpindi/Islamabad attended this session. Prof. Klaus von Klitzing and Prof. Douglas Osheroff each delivered a 10 minutes talk on "Life in Science" which was followed by direct interaction of young students with Nobel Laureates. After that Prof. Osheroff delivered a lecture on "The Discovery of Superfluidity in Helium-3; My Story" and Prof. Peter Agre delivered lecture on "Aquaporin Water Channels: From Atomic Structure to Clinical Medicine". The participants enthusiastically interacted with Nobel Laureates who shared their knowledge and experience with them. In the afternoon the Nobel Laureates visited the Science & Technology Expo-2007 organized by PSF at Shakarparian, Islamabad.

The third day of the Meeting was for interaction of young scholars of NSTC/ NPTC, INTEL competition, Physics Olympiad and BISE top students from various colleges. All the three

Nobel Laureates expressed their interesting experience in 10 minutes talk each on "Road to Nobel Prize". Young students put intelligent questions to the Laureates and greatly benefited from their knowledge and experience. Later a scientific movie "Semiconductors" was shown to the young scholars. Prof. Peter Agre, delivered a lecture to medical doctors of Army Medical College, Rawalpindi.

On the last two days of the Meeting the Laureates moved to Lahore. A large number of students, scientists, research scholars, faculty members of Government College University, Punjab University, University of Health Sciences, and other Institutions attended the Meeting and interacted with the Laureates. Prof. Douglas Osheroff and Prof. Peter Agre delivered very informative lectures. The proceeding of this second Meeting of Nobel Laureates with Pakistani students and young scholars received good coverage in print and electronic media.

Prof. Douglas Osheroff and Prof. Klaus von Klitzing participated in the "News Morning" programme of PTV World on 28th March, 2007. Prof. Peter Agre participated in a live programme "Morning with Farah" of ATV channel on 29th March, 2007. Prof. Osheroff and Prof. Klitzing participated in a live programme of Power Radio FM 99, Islamabad while Prof. Peter Agre and Prof. Douglas Osheroff participated in a live radio programme of FM 100.

I. S & T Expo- 2007: Shaping the Future

The Foundation has been organizing Science Fairs/ Exhibitions from time to time in the country. These Science Exhibitions act as a vehicle for propagation and promotion of science and technology. Not only the young students get inspiration from our scientific developments and from indigenous products of high technology comparable to the products of advanced countries, the scientific fascination also invites them to adopt careers of science in their future lives. The information on these scientific and technological developments also invokes in them the confidence and imbibes in them the spirit of making such contributions to their homeland in times to come.

This Science & Technology Expo-2007 under the title "Shaping the Future" was organized by Pakistan Science Foundation on behalf of the Ministry of Science and Technology at newly constructed Pakistan Monument at Shakarparian, Islamabad from 24 March to 23 April 2007.

The event was very successful and well appreciated by the students, teachers, researchers, Nobel Laureates, diplomats, scientists, govt. officials and the general public. The main objective of the Expo was highlighting the achievements of the Public Sector S&T-R&D Organizations. More than 20 organizations arranged their stalls in the Expo and about 100,000 persons visited the Expo. This was intended to provide an opportunity to the general public particularly the younger generation to observe the major achievements in S&T Sector since the creation of Pakistan. The Expo also provided a common platform to the S&T-R&D institutions, entrepreneurs, industrialists, planners and policy makers for interaction and possible collaboration. Besides contributing to the popularization of Science and Technology, the Expo promoted the process of diffusion of technology to the industrial sector.

The closing ceremony of the Expo-2007 was held at Holiday Inn, Islamabad on 23 April, 2007. Dr. Ishfaq Ahmed, *N.I., H.I., S.I.* Special Advisor to the Prime Minister was the Chief Guest. Dr. N. M. Butt, *S.I.* Chairman, Pakistan Science Foundation welcomed the Scientists and the Heads of the participating organizations. Activity Report of Expo was presented by Dr. S. Azhar Hasan, Member Science, PSF. Dr. Tariq-ur-Rehman, Chairman, PCST and Representatives of Participating Organizations delivered their speeches. Engr. Parvez Butt, Secretary, MoST delivered his speech and appreciated the efforts of the Foundation for the national cause of propagation of science. On conclusion of the ceremony, the Chief Guest gave away the Shields and certificates to the participating organizations and the organizing committees. Finally Mrs. Farhat Rajpar, Secretary, Expo presented vote of thanks to the participants. A full report of the expo has also been prepared separately.



Science Caravan Exhibition, Dr. N.M. Butt, Chairman, PSF interacting with the students



Students with Dr. S. Azhar Hasan & Ms. Farhat Rajpar during the briefing about Science Caravan Exhibition



Students showing keen interest in Working Model about Static Charge



Distribution of books and scientific literature to the students during Science Caravan Exhibition



Students going into the Dome of Starlab Planetarium System



Inside view of the Starlab Planetarium System



Independence Day August 14th, 2006 celebrations, students reciting the National Anthem



Student performing a tableau show as part of Independence Day Celebrations



Dr. Ishfaq Ahmed, Special Advisor to the Prime Minister addressing the audience during seminar on "Earthquake-Resistant Materials"



Dr. N.M. Butt, Chairman, PSF demonstrating an interesting experiment during the Seminar on "Earthquake-Resistant Materials"



Ms. Renee Clair, Director UNESCO Paris expressing her views during 3rd International Meeting of "Breaking the Poverty Cycle of Women"



*Participants of the 3rd International Meeting of "Breaking the Poverty Cycle of Women"
6th – 7th February, 2007*



Engr. Parvez Butt, Secretary, MoST addressing the "Convention of Scientists" organized by PSF as part of World Science Day for Peace & Development Celebrations



Dr. Ishfaq Ahmed, Special Advisor to the Prime Minister giving away the PSF Medal to the winner student



Judges Evaluating the Posters for the winners of 16th Inter Board Science Poster Competition



Nobel Laureate Peter Agre, USA (Chemistry, 2003) addressing the audience during 2nd Meeting of Nobel Laureates with Pakistani Students 27-31 March 2007



A girl student asking some questions to the Nobel Laureates during their 2nd Meeting with Pakistani Students/Young Scholars 27-31 March 2007



Nobel Laureate, Klaus von Klitzing, Germany (Physics, 1985) explaining some ideas to a young student during the 2nd Meeting of Nobel Laureates on 27-31 March 2007



General view of the S&T Expo-2007



A family taking keen interest in one of the exhibits



Students queuing up for the S&T Expo-2007



Students working out the distance through Laser-range Finder



Prof. von Klitzing, Prof. Osheroff (Nobel Laureates) accompanied by the Chairman & Member Science, PSF at IICS stall



Dr. Ishfaq Ahmad, Special Advisor to Prime Minister, writing his comments after the visit



Ms. Rozina Tufail, MNA being briefed about the S&T Expo-2007 by Dr. N.M. Butt, Chairman, PSF



Engr. Parvez Butt, Secretary, MoST receiving the Crest of S&T Expo-2007 from the Chief Guest Dr. Ishfaq Ahmed, Special Advisor to the Prime Minister

PAKISTAN MUSEUM OF NATURAL HISTORY(PMNH)

The statutory functions of Pakistan Museum of Natural History include research on the natural resources of the country like Flora, Fauna, Geology, Mineralogy, etc. besides public education on these aspects. PMNH has four Divisions, namely Botanical Sciences Division(BSD), Earth Sciences Division (ESD), Zoological Sciences Division(ZSD) and Public Services Division(PSD). The first three Divisions are mainly engaged in research activities while the fourth carries out development of display exhibits and arranges activities pertaining to public education. Keeping in view the statutory functions of PMNH, its scientific and technical staff remain busy carrying out various scientific projects funded by Pakistan Science Foundation and other agencies. International collaborative research projects are also being run by PMNH scientists and their foreign counterparts. The results of research work are published in the form of books and research articles in reputed national and international journals. As part of educational activities PMNH scientists arrange various workshops and training programmes for the students and teachers of educational institutions. Lectures on scientific topics are also delivered by the officers of PMNH. Following are the details of the activities carried out during the year.

2.1 RESEARCH WORK

a. Field Work:

PMNH scientists carried out fieldwork in various areas of Balochistan, Sindh, Punjab, NWFP, Azad Kashmir and Northern Areas under different national and international research projects to collect natural history samples for research purpose and to build up the repository of natural history specimens of the country in PMNH. Some 5000 specimens of animals, plants, rocks, minerals and fossils were collected along with field data and photographs. These specimens were preserved, identified, catalogued and stored in the reference depository of PMNH for research and reference.

b. Publications:

Books Published:

Shinwari, M. I., Shinrawi, M. I. & **Shah, M.** 2007. Medicinal Plants of Margalla Hills National Park, Islamabad. Higher Education Commission, Islamabad. 218 P.

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Nadeem, M.S., **Asif, M.**, Mujtaba, G., Mahmood, T. 2006. Apparent unrecorded migratory route of Dalmatian Pelican *Pelecanus crispus* in Nag valley, Pakistan. *Birding Asia*, vol.**73**: 4.

Burg, J.P., Jagoutz, O., **Dawood, H.** and **Hussain, S. S.** 2006. Precollision tilt of crustal blocks in rifted island arcs: structural evidence from the Kohistan Arc. *Tectonics*, vol. 25, *Tectonics* 5005, doi: 10.1029/2005 TC 001835. American Geophysical Union. Pp.1-13.

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c. International Collaboration on Research

- Continued collaboration on the international research project entitled “The early evolutionary stages of an island arc: the dunite-pyroxenite-gabbro association of Sapat, Kohistan, NE Pakistan” being carried out by PMNH, Swiss Federal Institute of Technology (ETH), Switzerland and CNRS, Montpellier University, France.
- A five-member team from Japan Landslide Society (JLS) headed by Prof. Dr. Hideahi Marui, President JLS visited PMNH. They discussed with PMNH geologists regarding future collaboration between JLS and PMNH.
- Under a 3-years on-going International Collaborative Research Project “Early Triassic biostratigraphy and carbon isotope stratigraphy of the Salt Range” the scientists of Earth Sciences Division, PMNH along with paleontologists of Institute & Museum of Paleontology, University of Zurich (PIMUZ), Zurich, Switzerland, carried out 15 day field work in Mianwali area, Salt Range. National Science Foundation (NSF), Switzerland provided funds for this fieldwork.
- A two-member team of vertebrate paleontologists, Prof. Dr. John.C. Barry of Peabody Museum, Harvard University and Prof. Dr. Catherine Badgley of the University of Michigan, USA, paid a 3-day visit to PMNH. Scientists of Earth Sciences Division had discussions with the visiting paleontologists on different joint collaborative research projects on Neogene Rocks of Pakistan. The visiting scientists showed keen interest in the vertebrate fossils collected by geoscientist of Earth Sciences Division, PMNH.

d. Technical/Research Project Reports Submitted:

- Prepared and submitted Final technical report of the PSF funded project entitled “Documentation of Indigenous Knowledge About Medicinal Plants of Pakistan”
- Prepared and submitted Final technical report of the PSF funded project entitled “Inventory of Faunistic Diversity in Margalla Hills National Park.
- Prepared and submitted to Indus for All Programme (IFAP), the report on “Baseline studies on fish and fisheries of Keti Bundar, Kinjher Lake and Chotiari reservoir”.
- Prepared and submitted to Indus for All Programme (IFAP), the report on “Baseline studies on the small mammals of Keti Bundar, Kinjher Lake, Chotiari Reservoir and Pai forest”.

e. Project Proposals Submitted:

The following project proposals were submitted to Pak-US Natural Sciences Linkages Program (NSLP) for funding.

- Demersal finfish fauna and their trophic relationship in the Coastal water of Sindh, Pakistan.
- Taxonomy and Integrated Management of fruitflies in Punjab & NWFP Provinces.
- Conservation assessment and exploration of potential of Giant Seabass (*Lates calcarifer*) aquaculture in the coastal area of Pakistan.

f. Development Project:

- Major part of the work on the development project on "Completion of Block II & Strengthening of Research and Display Activities of PMNH" has been completed under the supervision of Dr. M Rashid Awan, Project Director, Director, BSD. Construction of Animated Exhibits has also been carried out under the same project.

2.2 EDUCATIONAL ACTIVITIES

a. Seminar on Earthquake:

A one-day seminar on "Post 8th October, 2005 Earthquake Scenario: Achievements and Challenges" was held in PSF auditorium on 21st November, 2006. Minister of State for Education Ms. Anisa Ziab Tahirkheli was the chief guest at the inaugural session of the seminar. Renowned geologists, seismologists, earthquake engineers, city planners and disaster management experts deliberated on the various issues regarding earthquake and presented suggestions to meet such challenges in future in the country.

b. Seminar/Conference/Congress Attended:

Mr. M Rafique, Dr. Khalid. Mehmood, M. Habib Ali, Ahsan Feroze, M. Asif Khan, M. Abbas, S.A. Amir, R. Masroor & M. Ullah of ZSD, and Dr. M. K. Leghari, Dr. M. Ibrar Shinwari & S. Aneel Gilani of BSD attended an International Conference on Biodiversity Conservation as a Renewable Resource of Pakistan on 13-14 March 2007 at University of Arid Agriculture, Rawalpindi. The following research papers were presented in the conference:

- Immensity of Biodiversity supported by the Indus drainage in Pakistan by Hasan, S.A., Rafique, M., Ali, M.H., Feroze, A., Kahn, MA., Masroor, R. & Amir, S.A.
- Insect Biodiversity of Pakistan by Ullah, M., Mahmood, K. M. & Abbas, M.
- Ecological study of fresh water algae of Kinjhar Lake, Sindh by Leghari, M.K.
- Indigenous knowledge a tool for Biodiversity Conservation by Gilani, S.A.A.

Dr. M. Shinwari of BSD attended 3rd Global Botanic Gardens Congress at Wuhan, China from 16th to 20th April 2007 and presented a paper entitled Sustainable utilization of Moist Temperate Himalayan Medicinal Plants of Pakistan.

Dr. M. Shinwari of BSD attended International Conference on Biological Resources of Pakistan: Problems, Constraints and Solutions at Arid Agriculture University, Rawalpindi on 23-25 April 2007 and presented a paper on Growing solutions to Biological problems in Pakistan.

c. Human Resource Development.

i. Completion of Ph. D.:

- Dr. Saleem Ahmad, Associate Curator, BSD, received Ph. D. degree in Biology (Plant Taxonomy) from Quaid-i-Azam University, Islamabad.
- Dr. Muhammad Rafique Associate Curator, ZSD, received Ph. D. degree in Zoology from the University of Arid Agriculture, Rawalpindi.

ii. Trainings Received:

- Dr. M. Rashid Awan, Director, BSD, received a 3-day training on Management by Objectives from the Management Services, Establishment Division, Government of Pakistan.
- Dr. Khalid J. Baig, M. Asif, A. Yaseen, K.A. Mirani and R. Masroor received training on Corel Draw Applications while M. Abbas and S.A. Amir received training on Spread Sheet Analysis at Pakistan Computer Bureau.

- Dr. Khalid. Mehmood, Associate Curator, ZSD and Mr. Ubaid Ullah Azeem, System Analyst, attended training course on Node Preparation Training of Global Biodiversity Information Facility Monitoring Project, organized by Commonwealth Industrial and Scientific Research Organization (CISRO), Canberra, Australia.
- Dr. Khalid. Mehmood of ZSD and S. Aneel A. Gilani of BSD participated in a Workshop on Data Warehousing and Data Mining on 20-21 February, 2007 organized by PASTIC, PSF, EXPEDO-France at PSF.
- Dr. M. Ibrar Shinwari and S. Aneel A. Gilani of BSD attended International Workshop on Research, Development and Emerging Technologies at HEC Auditorium, Islamabad from 29th to 30th May 2007.
- Mr. S. Aneel A. Gilani of BSD received training on Project Management and Evaluation at Planning and Management Institute, Islamabad from 9th to 14th April, 2007.
- Mr. Mishkat Ullah attended training course on Spreadsheet Analysis on 2nd to 16th April 2007 at Pakistan Computer Bureau, Islamabad.
- Muhammad Abbas and Mishkat Ullah attended Hands on training of taxonomists through expedition from 29th May to 12th June 2007 at National Agricultural Research Centre, Islamabad.
- Mr. Jaffer H. Naqvi, Assistant Librarian, PMNH received training on HTML on 12-23 March 2007 from Pakistan Computer Bureau

2.3 DESIGN AND DISPLAY ACTIVITIES

- Prepared PC-I and layout/designs for the establishment of S&T segment at the National Memorial Museum Islamabad
- Planned, designed and executed National Science and Technology Expo 2007. The major activities included installation of displays and site management besides designing of all graphics such as logos, brochures, banners and reports.
- Planned, designed and executed Ministry of Science and Technology Float for Pakistan Day parade.
- Supervised preparation of 25 Animated Exhibits of PMNH.
- Prepared Block distribution plan for Science Centres sites for PSF.
- Provided design services to PSF and Ministry of S&T and other organizations.

- Attended meetings for preparation of PC-I of National Science Museum at Islamabad and provided advisory input regarding displays/exhibitions

2.4 SERVICES RENDERED TO OTHER AGENCIES/INSTITUTIONS

a. Service as External Examiner:

- Dr. M. K. Leghari, Curator, BSD conducted final viva examination of a Ph. D. scholar in Phycology at the Department of Botany, University of Peshawar. He also conducted practical examination of M. Sc. students of the Department of Botany, University of Peshawar, and Islamia College, Peshawar.

b. Guidance to M. Sc. students:

- Seven M. Sc. Botany students from AJK University were provided guidance and identification of specimens for their thesis by Dr. M.K. Leghari, Curator and Dr. Saleem Ahmad, Associate Curator, BSD.
- Dr. Kahlid Mehmood and Mishkat Ullah of ZSD supervised two B.Sc. (Hons) Agri. Entomology students from NWFP Agricultural University, Peshawar, and four B.Sc. (Hons) Agri. Entomology students from University of Arid Agriculture, Rawalpindi.

c. Identification:

- Dr. Saleem Ahmad identified 150 plant specimens brought by five M Sc. students of Azad Jammu and Kashmir University.

d. Consultation:

- Provided services to WWF-Pakistan for EIA studies of the Taunsa Barrage, river Indus Delta area, Keyal Hydropower project, Kinjher Lake, and Chotiari reservoir. Conducted EIA studies for Keyal Hydropower project, Kohistan.
- Rendered EIA studies at Diامر Basha Dam, Chilas on the Herpetofauna for National Development Consultants (NDC) Pvt. Limited, Lahore.

e. Taxidermy:

- Stuffed two Deer, a skin of Deer and a Leopard.

2.5 MISCELLANEOUS ACTIVITIES

- Total number of visitors to Museum during the year was 27026 (students 17237, general public 9472, foreigners 317)
- Arranged lectures/film shows in and outside PMNH for students from schools, colleges and universities
- Arranged guided tours of PMNH for a large number of students/ VIPs
- Arranged visits of schools and colleges students at the National Science and Technology Expo 2007 held at National Memorial Museum at Shakarparian from March 24 to April 23. 98 schools and colleges of the twin cities of Rawalpindi and Islamabad visited the Expo.
- Prepared a documentary on PMNH titled “Exploring The Nature” for screening at the National S&T Expo.
- Dr Syed Shahid Hussain, Director, PSD worked as Resource Person for preparing the following two documentaries by PASTIC through private production houses under the programme of Science Education through TV Channels.
 1. Earthquake prone areas of Pakistan
 2. Science and Technology Museums of Pakistan

Important Visits/Meetings:

- Dr Syed Shahid Hussain, Director, PSD participated in arranging and conducting the visit of National Assembly Standing Committee on Science and Technology to Pakistan Museum of Natural History, Islamabad in March 2007.



US delegation visiting PMNH



French delegation visiting PMNH



Under Construction Block II of PMNH



Seminar on Earthquake organized by PMNH

3. PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

Pakistan Scientific and Technological Information Centre (PASTIC), is the oldest organization in the field of information dissemination serving thousands of researchers. It is a unit of Pakistan Science Foundation, an autonomous organization under the Ministry of Science & Technology. PASTIC is an ISO 9001:2000 Certified organization serving Academia, Research & Development Organizations and Entrepreneurs by enhancing access to and delivery of S&T information.

The National Centre is housed in its own building situated in the Quaid-i-Azam University Campus, Islamabad. It has five Sub-Centres at Karachi, Lahore, Peshawar, Faisalabad, Quetta and Muzaffarabad. Its sanctioned strength is about 158 including Technical and Administrative Staff.

The Aims & Objectives of PASTIC are as under:

- To procure, process and disseminate scientific and technological information to the researchers.
- To interact with regional and international information agencies/networks.
- To develop inter-library cooperation, resource sharing at national level.
- To train information personnel in contemporary techniques and methods of information handling.
- To develop and strengthen the National Science Reference Library.
- To compile and publish reference information publications such as Directory of S&T Periodicals of Pakistan, Union Catalogue of Scientific Periodicals in the libraries of Pakistan etc.
- To publish an abstracting and indexing journal entitled "Pakistan Science Abstracts".

3.1 ACTIVITIES AND SERVICES

The activities undertaken during the period, July 2006 to June 2007 are briefly described below:

3.1.1 Document Procurement and Supply Service

Under the Document Procurement and Supply Service, requests were received from different R&D organizations for supply of reprints of research articles, conference papers and reports etc., which were procured either from local sources or from abroad. With the Digital Document Supply Service (DDSS) the time of supply of the order has been reduced to only few hours instead of days. This service enables us to supply documents through e-mails or providing access to the clients to the domain through secure password to download the required information. A total number of 2304 S&T documents were procured and supplied against 3000 requests received from scientists, researchers and other R&D workers.

3.1.2 Bibliographic Information Service

Under this service abstracts and references from International Online and Offline bibliographic information databases were supplied to users according to their research topics on request. During the report period 75,845 abstracts on various S&T topics were supplied to 568 researchers. The following databases were used for provision of this service.

- MEDLINE (1966 to date with Abstracts)
- POLTOX (1966 to date with Abstracts)
- LIFE SCIENCES (1982 to date with Abstracts)
- PROQUEST (1992 to date with Abstracts)
- APPLIED SCIENCE & TECHNOLOGY INDEX (1993 to date)
- CURRENT CONTENTS (1995 to 1999)
- SOCIOFILE (1963 to June 1999)
- COMPENDEX SITE ON ENGINEERING (1995/2004/)
- INSPEC (2000 to 2002 with Abstracts)
- DERVENT BIOTECHNOLOHY ABSTRACTS (1982-2005)

For further strengthening of the bibliographic information service and resources of PASTIC Sub-Centres, following online bibliographic databases were purchased.

- Embiology 1980 to date
- International Science Database (ISD)

3.1.3 Abstracting and Indexing Service

PASTIC provides abstracting and indexing service by publishing an abstracting journal entitled “Pakistan Science Abstracts” which serves as a secondary information source to give support to research and development activities in the country. The scientific information generated in Pakistan or abroad and published in Pakistani journals is documented in this secondary journal. The abstracts of research articles along with detailed author index and keyword index are published in Pakistan Science Abstracts. This abstracting journal named Pakistan Science Abstracts (PSA) is published in ten different scientific disciplines. Following Pakistan Science Abstracts (PSA) of 2005 were published during the year 2006-2007

- PSA on Agricultural Sciences, 2005, Vol.43-A
- PSA on Animal Sciences, 2005, Vol.43-D
- PSA on Biochemistry & Biotechnology, 2005 Vol.43-B
- PSA on Chemical & Pharmaceutical Sciences 2005, Vol.43-C
- PSA on Earth & Environmental Sciences, 2005, Vol.43-E
- PSA on Information, Communication and Engineering Sciences, 2005, Vol.43-I
- PSA on Mathematics & Statistics 2005, Vol.43-G
- PSA on Plant Sciences 2005, Vol.43-J
- PSA on Physics 2005, Vol.43-F

In addition, abstracts of Pakistani S&T journals for the year 2006 have been collected and composed. Indices and lists are being compiled and would be ready for printing shortly.

3.1.4 PASTIC National Science Reference Library

PASTIC National Science Reference Library is aimed at providing reference and referral service to the users and strengthening of all the services of PASTIC especially document supply service, bibliographic information service, abstracting and indexing service, technological information service, etc.

PASTIC Library has initiated SDI (Selective Dissemination of Information) service to save the precious time of users by circulating Fresh Arrivals to Libraries & Researchers. About 680 users visited PASTIC Library for reference, reading and photocopying services. 1125 articles

were supplied to the researchers. 1026 issues of national & international journals along with books, reports, miscellaneous documents, etc. were received in the library which were processed and shelved for use. Virtual Library Services were provided to 35 users. Automation and digitalization of PASTIC library remained in progress during the period under review. During 2006-07, 1018 data entry sheets for books were filled and computerized by using WINISIS software.

3.1.5 Reprographic Service

The Reprographic Section of PASTIC has facilities ranging from photocopying to offset printing. During the year 2006-2007 about 78 printing jobs for various kinds of publications, such as monographs, reports, folders, brochures, newsletters, registers, etc., were undertaken for 9 organizations including composing, offset and laser printings.

3.1.6 IT Support Service

This service plays a pivotal role in carrying out PASTIC activities. During the period under report following activities were undertaken.

- Transformed PASTIC Wide Area Network from cable network to wireless media for smooth running of internet.
- Composing and compilation of Pakistan Science Abstracts of six disciplines.
- Automation of Canadian patents (4890 records).
- Fast internet facility has been implemented through NTC and HEC PERN setup.
- Created online accounts of PASTIC and PSF with PPRA website and uploaded online tenders.
- PASTIC Website was updated regularly.

3.1.7 International Liaison

PASTIC is the National Focal Point of International/Regional Information Centres and Networks like, SAARC Documentation Centre (SDC), WHO/CEHANET and is also the UNESCO designated distributor of WINISIS software package for Information Management. The following collaborating activities were undertaken under international liaison activities.

a. SAARC Documentation Centre: SAARC Documentation Centre (SDC) is a regional centre of SAARC. It was established in 1994 to act as an effective information system of Member States that enables exchange of information in various fields. Another objective of the SDC is to develop human resources in the Member States in the area of information science, technology, management systems and services. In this regard following activities were undertaken during the period under report.

- Information for the publication of SAARC Abstracts, Development of SAARC databases on Medicinal & Aromatic Plants, Solar Energy Research Organizations in the country and Training Facilities in Library & Information Science, etc., was collected, compiled and forwarded to SDC.
- Eight officers of PASTIC and one from MoST participated in SDC trainings, workshops and meetings.
- A SAARC Workshop on Access to Information & Intellectual Property Rights Issues was organized on 19-22 Dec., 2006 in Islamabad, which was attended by India, Nepal, Pakistan & Sri Lanka. Three SDC experts facilitated the workshop as Resource persons. 26 participants attended the workshop from various libraries / information centers, PASTIC and SAARC Member countries.

b. UNESCO: PASTIC is responsible for the distribution of UNESCO developed WINISIS software/package and also provides training on this package. Following activities were undertaken with regard to WINISIS during the reported period.

- 39 copies of WINISIS Package (English Version) were supplied to various organizations/departments such as the British Council, Fisheries Research & Training Institute, Lahore, National Defence College, Islamabad, Mian Muhammad Bakhsh Public Library, Mirpur, International Islamic University, Islamabad, D.J. Sindh, Govt. Science College, Karachi, and NORI, Hospital, Islamabad.
- PASTIC facilitated Mehran University of Engineering & Technology, Jamshoro by supplying CDs of the package for their Workshop on “Using. ICT for Library operations for Effective Management of User Services 12-14 February, 2007”.

A Project proposal was prepared and submitted to the Pakistan National Commission for UNESCO on “National Repository of Pakistani Publications” to be funded by UNESCO under the Participation Programme of UNESCO.

3.1.8 Bilateral Cooperation

Project Proposals for S&T collaboration in the field of Information Exchange with China, Argentina, Austria and Japan, Thailand, USA, etc., were prepared and submitted to Ministry of Science and Technology.

3.1.9 Trade & Technological Information Services

This service is particularly meant for the SMEs, entrepreneurs and the industry. Under this service following types of activities are undertaken.

- a. Technological Information Promotion System (TIPS):** TIPS is a global information network through which PASTIC carried out the following activities:
- Provision of information services on trade offers about Pakistani products/technologies to member countries and vice-versa acting as a bridge between local and foreign companies.
 - Collection & Dissemination of information on technologies, encouraging direct transactions between suppliers and buyers through directories.
 - Facilitating-business contacts, linking buyers and sellers of technology.

TIPS users include, Business managers, Trade associations, Importers / Exporters, Manufacturers & industrialists entrepreneurs, R & D Centers, etc.

Information about Trade and Technology offers and requests from various countries as well as Pakistan is being collected and compiled.

- b. Patent Information Services:** PASTIC provides following Patent Information Services.
- Patent Search Services
 - Provision of Copies of Patent Documents
 - Guidance/Checklist for patenting an invention/filing & filing patent applications

During the period under review, Patent Services were provided to NWFP University of Agriculture, Peshawar, PMRC, FAST, NUST, KRL, CASE/CARE, Greenwich University and a few entrepreneurs in different fields.

3.1.10 Human Resource Development

An important activity of PASTIC is to impart training on computer applications for Office & Library Automation and other fields. Following workshops were organized during the report period.

a. Training/Workshop organized for Information Professionals

1. SAARC Workshop on Access to Information & Intellectual Property Rights Issues. 19-22 Dec., 2006, Islamabad

The Workshop on Access to Information & Intellectual Property Rights Issues was organized on recommendation of the 11th Governing Board Meeting held in 2005 and was sponsored by SAARC Documentation Center(SDC). This workshop was attended by Information & Knowledge Management professionals and IP Managers from India, Nepal, Pakistan & Sri Lanka. Experts came from SDC and Pakistan as Resource persons. 26 participants from various libraries / information centers, PASTIC and SAARC Member countries attended the workshop. Topics included were Intellectual Property Rights – Overview, Knowledge Society and IPRs, Libraries and IPR, Sharing Knowledge and Access to Information by SAARC nations, ICT and IPR, Copyright, Digital Information, Networks, Web/Web publishing, Open Access, Electronic Rights Management, Digital Rights Management, Assets Protection, Security of Digital Media – Cryptography, Issues related to E-Journals Pricing model, Access Models, Licensing and Agreements, Archival Issues, etc.

2. Workshop on Data Warehousing & Data Mining, 20-21 February 2007, Islamabad.

In view of the importance of data storage and manipulation for information dissemination activities a workshop on “Data Warehousing and Data Mining” was organized from 20-21 February, 2007 at Islamabad in collaboration with French embassy through French Government EXPEDO Project. The workshop was aimed at

enhancing the awareness and skills in this newly emerging field and promoting sharing of knowledge, good practices and human resource capacity building for better decisions and strategies. The workshop was conducted by the three resource persons from France and two from Pakistan. Topics covered included, Multidimensional databases and Association rule mining, OLAP mining (On-Line Analytical Processing), OLTP (On-Line Transactional Processing), Issues that combine multidimensional databases and data mining techniques, Sequential pattern mining, - Algorithms and their extension to multidimensional databases, Stream mining, Inductive databases, Data acquisition from distributed data sources and Application of data mining in Pakistan. The workshop was attended by 68 participants from various organizations in Islamabad & Rawalpindi.

3. One-Day Seminar on “Empowering the R&D, SME & the Industrial Sector with S&T Information”

PASTIC, in collaboration with the Federation of the Pakistan Chamber of Commerce & Industry (FPCCI) organized a one-Day Seminar on “*Empowering the R&D, SME & the Industrial Sector with S&T Information*” on May 22, 2007 at FPCCI, Karachi. The aim of the Seminar was to deliberate upon the importance of S&T information by bringing together government, R&D, SMEs & the industry to discuss information needs for acceleration of industrial development in the country. Main topics discussed were PASTIC Services, Role of S&T information in national development, Importance of IPRs, Role of SMEDA & FPCCI. 70 participants attended the seminar.

b. Important Meetings / Workshops / Trainings Attended by PASTIC Officers

- Ms. Nageen Ainuddin, Director PASTIC attended the 12th SDC Governing Board Meeting at New Delhi, India, during 4-5, December, 2006.
- Ms. Nageen Ainuddin, Director PASTIC attended the PCSIR/Patent Advisory Cell Seminar as Resource person on 14-15 December, 2006.
- Ms Kausar Sohail, Sr. Bibliographic Officer attended WINISIS training to Commemorate SAARC Charter Day, at SAARC Documentation Centre, New Delhi, India from Dec. 8-14, 2006.

- Dr. Raja Razi Ul Hussnain, Senior Information Officer, Muhammad Husnain, Officer In-charge, PASTIC Sub Centre Faisalabad, Ms. Rahila Nawaz, ASIO and Mr. Muhammad Altaf, Scientific Information Officer participated in a one month short term training course on “Information Technology and Information Management”. Syed Habib Akhtar Jafri, Senior Librarian and Mr. Muhammad Ayub Dogar, Scientific Information Officer participated in an attachment training program of 3-months organized by SAARC Documentation Centre at New Delhi, India.
- Ms Kausar Sohail, Sr. Bibliographic Officer and Dr. Raja Razi Ul Hussnain, Sr. Information Officer attended training on “Financial Management” and “Project Management” organized by Pakistan Planning and Development Commission from March 26-31, and April 9-15, 2007 respectively at Islamabad.
- Mr. Saifullah Azeem, Sr. System Analyst and Mr. Muhammad Naveed Noor, System Analyst attended a workshop on Data Warehousing and Data Mining at Malaysia in December 2006.
- Mr. Saifullah Azeem, Sr. System Analyst participated in Data Mining Workshop from 24-28 April, 2007 at Bali, Indonesia.

3.1.11 Miscellaneous Activities

PASTIC coordinated the organization of 2nd Meeting of the Nobel Laureates with Pakistani Students / Young Scholars at Islamabad / Lahore, on March 27-31, 2007.

3.1.12 Development Project

a. Science Awareness through TV Channels

A development project entitled “Science Awareness through TV Channel” is under execution and would be completed by the end of 2007. The basic objective of the project is the creation of awareness and interest in science and technology through multimedia, specially the TV, leading to socio-economic development and better quality of life in Pakistan. Major activities of this project during the year 2006-2007 are as under.

b. Acquisition, translation and dubbing of S&T films and documentaries

- Acquired 10 S&T documentaries on environment and were translated, dubbed and aired on ATV Net work from 4th November, 2006 to 6th January, 2007.
- Acquired 50 S&T educational programmes from World Wide Entertainment, Australia.
- Contract Agreement signed with M/S World Wide Vision for translation and dubbing of 36 S&T educational programmes in Urdu.
- 6 programmes were translated by M/S World Wide Vision, Islamabad from English to Urdu.

c. Production of S&T films and documentaries

Following local S&T documentaries have been completed in all respects.

- Salt Range (Khewra Mines)
- River Systems of Pakistan
- Biotechnology in Pakistan
- Medicinal Plants in Pakistan

d. Training of young scientists for popularization of science through mass media

The following 2 workshops were organized under the programme.

I. Workshop on “**Media & Science Awareness in the Knowledge Society**” was organized from September 5-6, 2006, at Pakistan Forest Institute, Peshawar. The Inaugural Session was held on 5th September, 2006 presided over by Mr. Asif Iqbal Daudzai, Provincial Minister for Information & Public Relations, NWFP. 42 participants from 22 different S&T organizations and Print & Electronic Media participated in the workshop.

II. Workshop on “**Science Awareness through Mass Media**” was organized from 1-2 June, 2007 at Quetta in collaboration with Balochistan University of Information Technology and Business Management. 47 participants from various universities, scientific organizations & Media attended the workshop. Resource persons were invited from academia, R&D organizations & Media.



Mr. Jamal Shah Kakar, Speaker Provincial Assembly at the inaugural session of the workshop at Quetta



Group photo of the participants of workshop with organizers and resource persons



A view of the Inaugural session of workshop



Dr. Syed Azhar Hasan, Member Science, PSF addressing the Inaugural Session



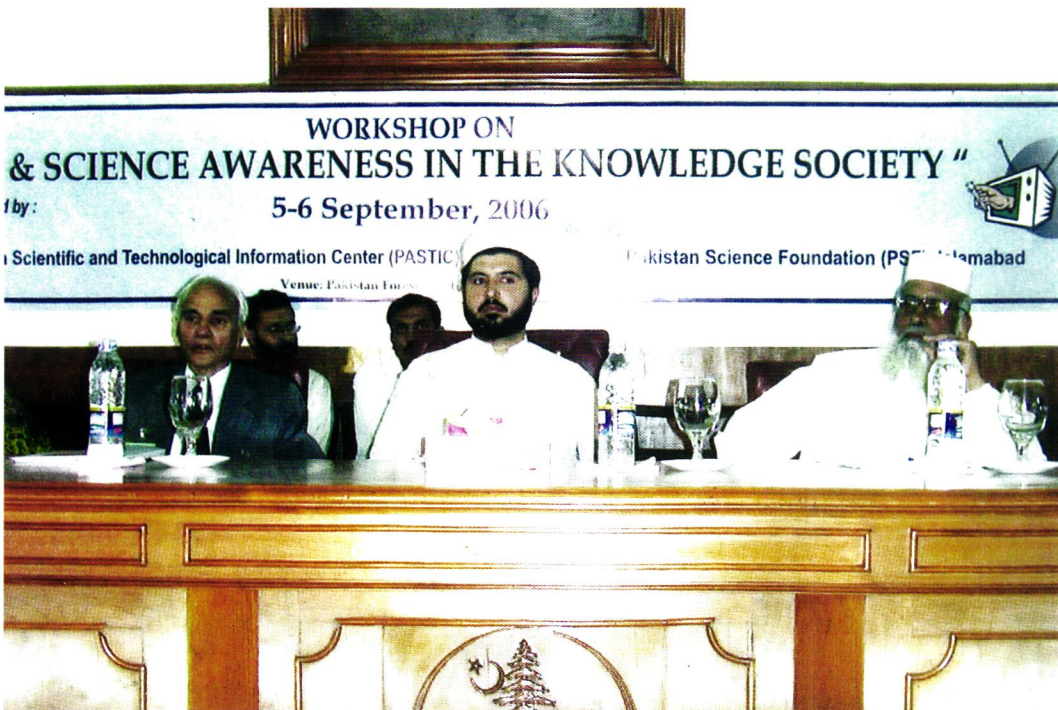
H.E. Ch. Nouraz Shakoorkhan, Federal Minister for Science & Technology presiding over the Workshop on Data Warehousing and Data Mining



Dr. N.M. Butt presenting souvenir to Dr. Anne Laurent



Dr. N.M. Butt, Chairman, PSF presenting souvenir to Chief Guest Mr. Asif Iqbal Daudzai, Provincial Minister for Information & Public Relations



Dr. N.M. Butt, Chairman, PSF and Mr. Asif Iqbal Daudzai, Provincial Minister for Information & Public Relations and Mr. Raza-ul-Haq, D.G., Pakistan Forest Institute at the Inaugural session of the workshop

4. INTERNATIONAL LIAISON

4.1 FOREIGN VISITS

- a) Dr. N.M.Butt, Chairman, Pakistan Science Foundation, Islamabad visited a number of countries to attend the following Conferences/Meetings.
- 1) Participation of Pakistani Students in 56th Meeting of Nobel Laureates in Lindau, Germany, w.e.f. June 22 to July 6, 2006.
 - 2) Visit to USA Nano Laboratories and Participation in International Congress of Nanotechnology 2006 at San Francisco, USA from Oct 26 to Nov 4, 2006.
 - 3) Participation in the 15th Science Conference of Islamic World Academy of Sciences, Ankara, Turkey, from Nov 5-11, 2006.
 - 4) Visit to famous French Museum for Science and Technology and also meetings with Prof. Georges Charpak and Prof. Jan-Marie Lehn, Nobel Laureate in Chemistry, from 15-20 Dec, 2006.
 - 5) G-8 UNESCO World Forum on “Education, Research and Innovation: new Partnership for Sustainable Development” Trieste, Italy, from 10-12 May, 2007.
- b) Dr. S. Azhar Hasan, Member Science visited Islamic Republic of Iran in connection with the UNESCO’s First Regional Experts Meeting on “Ethics Education in Science and Technology”. 28-29 October, 2006 and presented a country paper “Bioethics: Initiatives and Issues in Pakistan”. Experts from USA, Canada, France, Uzbekistan, Kyrgyzstan, Afghanistan and Vietnam participated in the meeting.

4.2 INTERNATIONAL COLLABORATION

- a. PSF in collaboration with MoST and UNESCO organized 3rd International Meeting of the Sub-Regional Network on Scientific Education and Popularization of Science on 6th -7th Feb, 2007 at PSF Auditorium, Islamabad with International Members and Partner NGOs. The reading material prepared by PSF (first draft) like booklets on Mother Child Health Care, Hepatitis, HIV/Aids, Small Income Generating Projects and Simple Scientific Experiments were presented to the participants. The material was thoroughly discussed and some changes were suggested for improvement of the material.

- b. A five-member team from Japan Landslide Society headed by Prof. Dr. Hideahi Marui, President JLS visited PMNH. They discussed with PMNH geologists regarding future collaboration between the society and PMNH.
- c. Under a 3-years on-going International Collaborative Research Project “Early Triassic biostratigraphy and carbon isotope stratigraphy of the Salt Range” the scientists of Earth Sciences Division, PMNH along with paleontologists of Institute & Museum of Paleontology, University of Zurich (PIMUZ), Switzerland, carried out 15 days field work in Mianwali area, Salt Range. National Science Foundation (NSF), Switzerland provided funds for this fieldwork.
- d. A two-member team of vertebrate paleontologists, Prof. Dr. John.C. Barry of Peabody Museum, Harvard University and Prof. Dr. Catherine Badgley of the University of Michigan, USA, paid a 3-day visit to PMNH. Scientists of Earth Sciences Division had discussions with the visiting paleontologists on different joint collaborative research projects on Neogene Rocks of Pakistan. The visiting scientists showed keen interest in the vertebrate fossils collected by geoscientists of Earth Sciences Division, PMNH.
- e. Project proposal for S & T collaboration in the field of Information Exchange with China, Argentina, Japan, Thailand and USA were submitted to MoST by PASTIC.

5. CAPACITY BUILDING

5.1 TRAININGS RECEIVED

- Dr. S. Azhar Hasan, Member Science attended a two days National training course on “Female Employment in Pakistan” organized by the Manpower Institute, Islamabad from 30-31 August, 2006.
- Dr. M. Rashid Awan, Director, BSD, received a three-days training course on Management by Objectives from the Management Services, Establishment Division, Government of Pakistan.
- Dr. Khalid. Mehmood, Associate Curator, ZSD and Mr. Ubaid Ullah Azeem, System Analyst, attended training on Node Preparation Training of Global Biodiversity

Information Facility Monitoring Project, organized by Commonwealth Industrial and Scientific Research Organization (CISRO), Canberra, Australia.

- Dr. Khalid J. Baig, M. Asif, A. Yaseen, K.A. Mirani & R. Masroor received training on Corel Draw Applications while M. Abbas and S.A. Amir received training on Spread Sheet Analysis at Pakistan Computer Bureau.
- Ms Kausar Sohail Sr. Bibliographic Officer attended WIN/ISIS training to Commemorate SAARC Charter Day, at SAARC Documentation Centre, New Delhi, India from Dec. 8-14, 2006.
- Dr. Raja Razi Ul Hussnain Senior Information Officer, Muhammad Husnain, Officer Incharge, PASTIC Sub Centre Faisalabad, Ms. Rahila Nawaz ASIO and Mr Muhammad Altaf Scientific information Officer participated in a one month short term training course on “Information Technology and Information Management”. Mr. Habib Akhtar Jaffary Senior Librarian and Mr. Muhammad Ayub Dogar Scientific Information Officer participated in attachment training program for 3-month organized by SAARC Documentation Centre at New Delhi, India. During 2006 & 2007.
- Ms Kausar Sohail Sr. Bibliographic Officer and Dr. Raja Razi Ul Hussnain Sr. Information Officer attended a training on “Financial Management” and “Project Management” organized by Pakistan Planning and Development Commission March 26-31, and April 9-15, 2007 at Islamabad.
- Mr. S. Aneel A. Gilani of BSD attended Training on Project Management and Evaluation at the Planning and Management Institute, Islamabad from 9th to 14th April, 2007.
- Mr. Mishkat Ullah attended “Spreadsheet Analysis” from 2nd to 16th April, 2007 at Pakistan Computer Bureau, Islamabad.
- Muhammad Abbas and Mishkat Ullah attended "Hands on training of taxonomists through expedition" from 29th May-12th June, 2007 at National Agricultural Research Centre, Islamabad.
- Mr. Jaffer H. Naqvi, Assistant Librarian, PMNH received training on HTML from 12-23 March, 2007 from Pakistan Computer Bureau

5.2 CONFERENCES/WORKSHOPS AND SEMINARS ATTENDED

- Dr. S. Azhar Hasan, Member Science attended Int'l Seminar on "Intellectual Property & Innovation Value Creation in the Knowledge economy" organized by the Pakistan Academy of Sciences, Islamabad from 12-13 December, 2006
- Mr. M Rafique, Dr. Khalid. Mehmood, M. Habib Ali, Ahsan Feroze, M. Asif Khan, M. Abbas, S.A. Amir, R. Masroor & M. Ullah of ZSD, and Dr. M. K. Leghari, Dr. M. Ibrar Shinwari & S. Aneel Gilani of BSD attended an International Conference on Biodiversity Conservation as a Renewable Resource of Pakistan on 13-14 March at University of Arid Agriculture, Rawalpindi. The following research papers were presented in the conference:
 - i. Immensity of Biodiversity supported by the Indus drainage in Pakistan by Hasan, S.A., Rafique, M., Ali, M.H., Feroze, A., Khan, M.A., Masroor, R. & Amir, S.A.
 - ii. Insect Biodiversity of Pakistan by Ullah, M., Mahmood, K.M. & Abbas, M.
 - iii. Ecological study of fresh water algae of Kinjhar Lake, Sindh by Leghari, M.K.
 - iv. Indigenous knowledge a tool for Biodiversity Conservation by Gilani, S.A.A.
- Dr. M. Shinwari of BSD attended 3rd Global Botanic Gardens Congress at Wuhan, China from 16th to 20th April, 2007 and presented a paper entitled "Sustainable utilization of Moist Temperate Himalayan Medicinal Plants of Pakistan".
- Dr. Khalid. Mehmood of ZSD and S. Aneel A. Gilani of BSD participated in a Workshop on Data Warehousing and Data Mining from 20-21 February, 2007 organized by PASTIC, PSF, EXPEDO-France at PSF.
- Dr. M. Ibrar Shinwari and S. Aneel A. Gilani of BSD attended International Workshop on Research, Development and Emerging Technologies at HEC Auditorium, Islamabad from 29th to 30th May, 2007.
- Dr. M. Shinwari of BSD attended International Conference on Biological Resources of Pakistan: Problems, Constraints and Solutions at Arid Agriculture University, Rawalpindi on 23-25 April, 2007 and presented a paper on "Growing solutions to Biological problems in Pakistan".

- Ms. Nageen Ainuddin, Director PASTIC attended the 12th SDC Governing Board Meeting at New Dehlli, India, during 4-5, December, 2006.
- Ms. Nageen Ainuddin, Director PASTIC attended the PCSIR/Patent Advisory Cell Seminar as Resource person on 14-15 December, 2006.
- Sr. System Analyst and System Analyst attended workshop on Data Warehousing and Data Mining at Malaysia in December 2006. .
- Mr. Saifullah Azeem, Sr. System Analyst participated in Data Mining Workshop 24-28 April, 2007 at Bali, Indonesia

5.3 LECTURES DELIVERED

Dr. N.M. Butt, S.I., Chairman, PSF, delivered the following lectures:

- 1. Pakistan Science Foundation and Nanotechnology in Pakistan**
Fachhochschule Coburg, Coburg, Germany, July 4, 2006
- 2. Nanotechnology: Industrial Applications and Possible Adverse Effects**
Pakistan Engineering Council (PEC), Islamabad, August 15, 2006
- 3. Technology Based Development: The Case of Nanotechnology**
International Conference on Technology based Development: Strategies and Options for Pakistan, Islamabad, organized by COMSATS, August 22, 2006
- 4. Introduction to Nanotechnology**
Computer Society of Pakistan, Rawalpindi / Islamabad Chapter, Islamabad, August 31, 2006
- 5. Comparative Study of Bulk and Nanoparticle Ferrites Using the Mössbauer Spectroscopy**
3rd International Congress of Nanotechnology (ICNT 2006), San Francisco, California, U.S.A., October 30 - November 2, 2006
- 6. Comparative Study of Bulk and Nanoparticle Ferrites Using the Mössbauer Spectroscopy**
Advanced Light Source, Lawrence Berkley National Laboratory, University of California, Berkeley, California, U.S.A., November 3, 2006,

7. Comparative Studies of Nano Size and Bulk Size Ferrites Using the Mössbauer Spectroscopy

Department of Physics, KOC University, C/o Prof. Dr. Ali Serpengusel, Istanbul, Turkey, November 14, 2006

8. Nanotechnology

18th FAOBMB Symposium on “Genomics and Proteomics in Health and Agriculture”, Punjab University, Lahore, November 23, 2006

9. Nanomaterials / Nanotechnology

National Seminar, Pakistan Institute of Metallurgy and Material Engineers (PIMME), PCSIR Laboratories Complex, Lahore, November 25, 2006

10. Nano Technology Update

Meeting on Emerging Technologies and Developing Countries, Islamabad, November 28-29, 2006

11. Nanotechnology and Efforts in Pakistan

2nd International Conference on “Frontiers of Advanced Engineering Materials” (FAEM-06), Lahore, December 4-6, 2006

12. Nanotechnology Innovations and Intellectual Property Rights

International Seminar on “Intellectual Property and Innovation: Value Creation in Knowledge Economy”, A.Q. Khan Auditorium, Pakistan Academy of Sciences, Islamabad, December 12-13, 2006

13. The Era of Nanotechnology

PAF Academy, Risalpur, January 12, 2007

14. Recent Trends in Nanotechnology

International Conference on the Role of Chemistry and Biochemistry for National Development, University of Balochistan, Quetta, April 16-18, 2007

15. Nanotechnology & Health Care

Army Medical College, Rawalpindi, 19th May, 2007.

16. Nanotechnology as a Multidisciplinary Subject

CIIT, Islamabad Campus, 28th May, 2007.

**ORGANISATION
&
ADMINISTRATION**

CHAPTER-2

ORGANIZATION AND ADMINISTRATION

The organizational structure of Pakistan Science Foundation, Pakistan Museum of Natural History & Pakistan Scientific & Technological Information Centre is given in the forthcoming pages. The staff position in the Foundation, PMNH and PASTIC during the report period is as under:

PAKISTAN SCIENCE FOUNDATION

SANCTIONED STRENGTH OF PSF FOR THE FISCAL YEAR 2006-07 (AS PER NIS)

S. No.	Name of Post	BS	No. of Posts
1	Chairman	22	1
2.	Member Science	21	1
3.	Member Finance	20	1
4.	Secretary	20	1
5.	C.S.O.	20	1
6.	Director (P&D)	20	1
7.	Sr. Additional Director (F&A)	20	1
8.	PSO	19	4
9.	Deputy Secretary	19	1
10.	Sr. Librarian	19	1
11.	Deputy Director (F&A & Budget)	18	2
12.	Senior Research Officer	18	2
13.	Senior Scientific Officer	18	3
14.	Deputy Director (Admn)	18	1
15.	Sr. Caravan Incharge	18	2
16.	Personal Secretary to Chairman	18	1
17.	Assistant Director (Admn)	17	2
18.	Caravan Incharge	17	3
19.	Internal Audit Officer	17	1
20.	Personal Secretary to C. S. O.	17	1
21	Liaison Officer	17	1
22.	Scientific Officer	17	4
23.	Sr. Graphic Artist	17	1
24.	Accountants	16/17	4
25.	Superintendents	16	3
26.	Sr. Driver-Cum-Mechanic	16	2

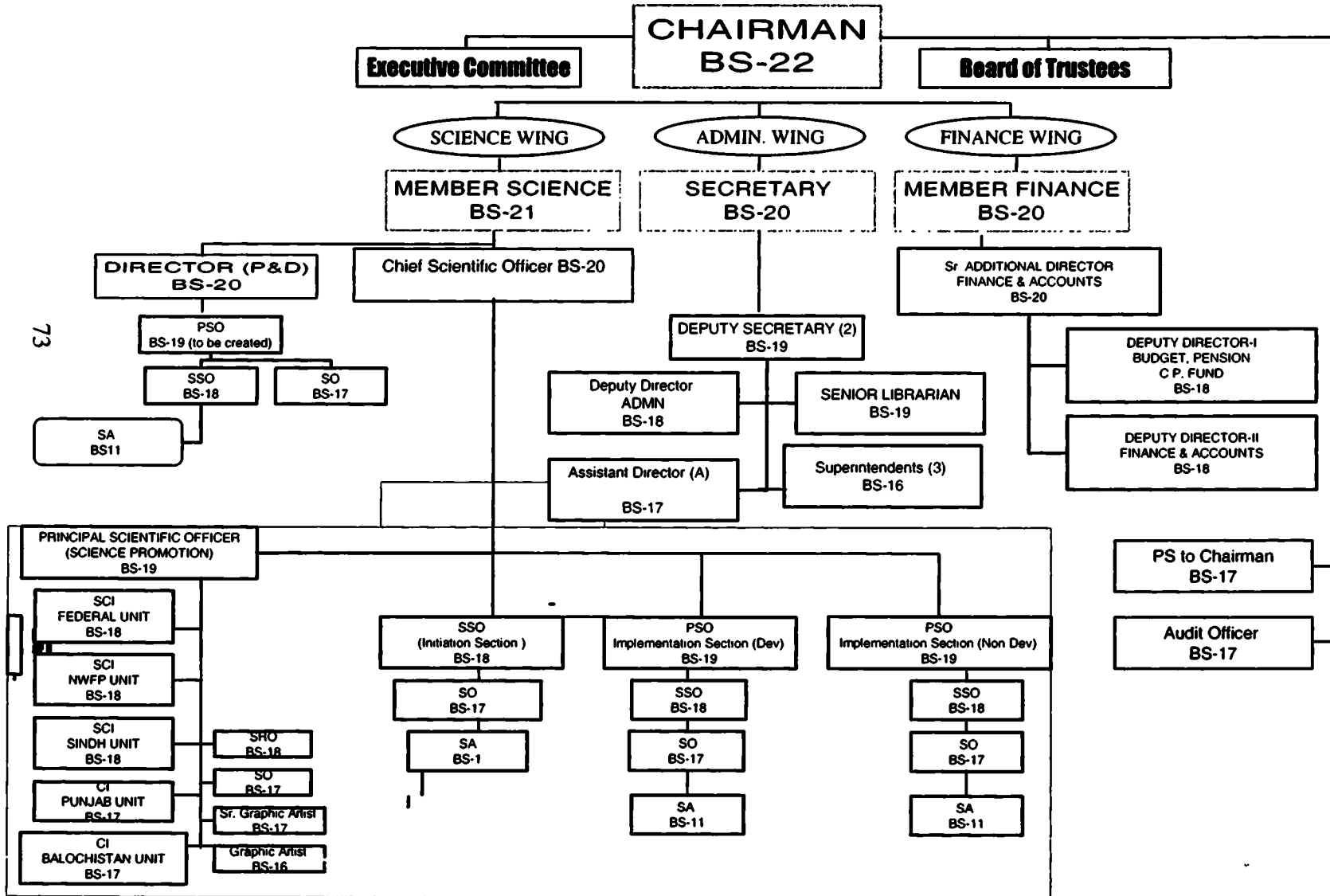
27.	Sr. Caravan Assistant	16	4
28.	Graphic Artist	16	1
29.	Mechanic for Instruments	16	1
30.	Assistant Research Officer	16	1
31.	PA to Chairman & Director (P&D)	16	2
Sub Total:-			55
32	Stenographer	15	6
33	Caravan Assistant	14	11
34	Photographer	14	1
35	Stenotypist	12/14	5
36	Asstt./A.A.A./Cashier	11	5
37	Planetarium Assistant	11/15	5
38	Science Assistant	14	4
39	Caligrapher	11	1
40	Driver-Cum-Mechanic	11	3
41	Sr. Electrification	11	1
42	Carpenter	9	1
43	U. D. C.	7	4
44	Telex Operator	7	1
45	LDC/Typist/Telephone Operator	5/7	12
46	Driver/D. R.	4	14
47	D. M. O.	4	1
48	Mali	1/2	2
49	N/Quasid/Quasid	1/2/3	18
50.	Guards	1/2/3	15
51.	Caravan Attendant	1/2	5
52.	Sanitary Worker	1/2	4
Sub Total:			119
Grand Total:-			174

**NEWLY CREATED POSTS IN PSF (AS PER DECISION OF PSF B.O.T.
IN ITS MEETINGS DATED 18.02.2006 & 17.6.2006)**

S. No	Name of Post	BS	No of Posts
1.	Sr. Science Promotion Officer	18	1
2.	Sr. Scientific Officer	18	1
3.	Science Promotion Officer	17	1
4.	Scientific Officer	17	2
5.	Science Assistant	14	1
6.	Technical Assistant	14	1
7.	Naib Quasid	1	1
Grand Total			182

ORGANIZATIONAL CHART 2006-07

PAKISTAN SCIENCE FOUNDATION



73

PAKISTAN MUSUEM OF NATURAL HISTORY ISLAMABAD

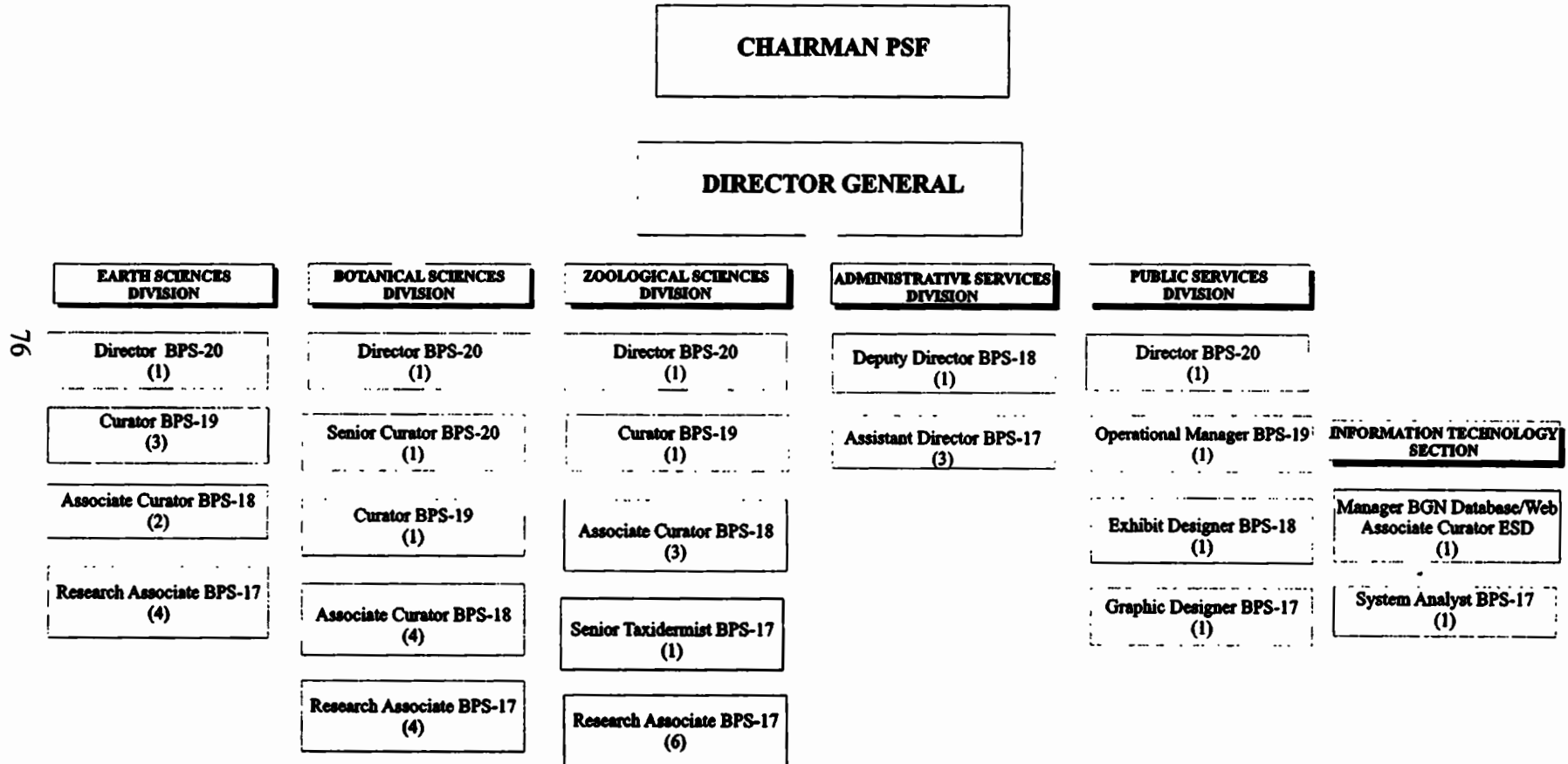
SANCTIONED STRENGTH FOR THE YEAR 2006-2007

Sr. No	Name of Post	BS	No. of Post
1.	Director General	21	1
2.	Director	20	4
3.	Operational Manager	19	1
4.	Curator	19	4
5.	Deputy Director (Admin)	18	1
6.	Associate Curator	18	12
7.	Exhibit Designer	18	1
8.	Assistant Director (Admin)	17	1
9.	Assistant director (Accounts)	17	1
10.	Research Associate	17	14
11.	Graphic Designer	17	1
12.	Sr. Taxidermist	17	1
13.	System Analyst	17	1
14.	Assistant Research Associate	16	2
15.	P.A. to the Director General	16	1
16.	Associate Artist	16	1
17.	Teacher Guide	16	1
18.	Children Education Programmer	16	1
19.	Sr. Photographer	16	1
20.	Accountant	16	1
21.	Assistant Librarian	16	1
22.	Taxidermist	16	1
23.	Superintendent	16	1
24.	Casting Staff	16	1
25.	Modeler	15	1
26.	Fossil Preparator	15	1
27.	Stenographer	15	1
28.	Calligrapher	15	1
29.	Stenotypist	12	2
30.	Sr. Skeleton Preparator	12	1
31.	Computer Operator	12	1
32.	Office Assistant	11	1
33.	Purchase Assistant	11	1
34.	Accounts Assistant	11	1
35.	Cahier	11	1
36.	Painter	11	1
37.	Sr. Collection Incharge	9	2
38.	Carpenter	9	1

39.	Drying & fumigating Assistant	9	1
40	Lath Machine Operator	9	1
41.	Collection Incharge	9	1
42	Incharge Embalming	8	1
43.	U. D. C	7	2
44.	Store Keeper	7	1
45.	Drying & Fumigating Assistant	7	1
46.	Collection Incharge	7	1
47.	Skeleton Preparator	7	1
48.	Tracer	7	1
49.	Electrician	7	1
50.	Field Assistant	7	1
51.	Driver	7 SS	4
52.	L. D. C.	5	2
53.	Driver	5	1
54.	Field Assistant	5	11
55.	Dispatch Rider	4	1
56.	D. M. O.	4	1
57.	Helper	3	2
58.	Sanitary Worker	3	1
59	Security Guard	3	1
60.	Gardener	2	1
61	Sanitary Worker	2	4
62.	Security Guard	2	5
62	Security Guard	1	8
63	Naib Qasid	1	7
64	Helper	1	3
		Total	136

PAKISTAN MUSEUM OF NATURAL HISTORY

EXISTING ORGANIZATIONAL CHART



**PAKISTAN SCIENTIFIC & TECHNOLOGICAL INFORMATION
CENTRE, ISLAMABAD**

SANCTIONED STRENGTH FOR THE YEAR 2006-07

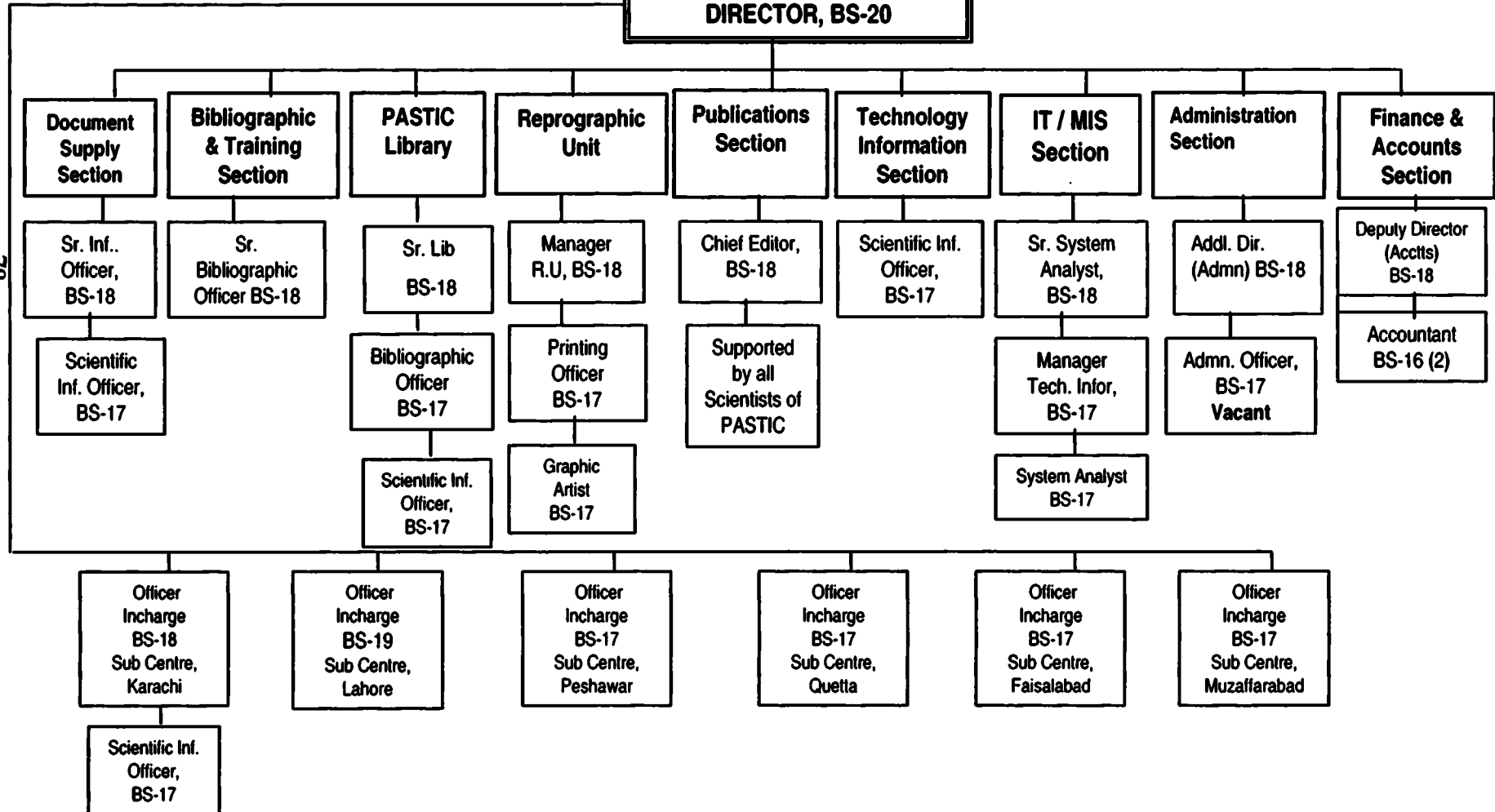
S.No.	Name of Post	BS	No. of Post
1.	Director General	21	1
2.	Director	20	1
3.	Deputy Director (Doc)	19	1
4.	Additional Director (A&F)	19	1
5.	Chief Liaison Officer	18	2
6.	Sr. Translating Officer	18	1
7.	Manager Reprographic Unit	18	1
8.	Sr. System Analyst	18	1
9.	Sr. Documentation Officer	18	1
10.	Chief Editor	18	1
11.	Sr. Information Officer	18	1
12.	Sr. Bibliographic Officer	18	1
13.	Sr. Librarian	18	1
14.	Scientific Information Officer	17	8
15.	Bibliographic Officer	17	2
16.	System Analyst	17	2
17.	Manager Technology Information	17	1
18.	Assistant Director (Admn)	17	1
19.	Assistant Director (Accounts)	17	1
20.	Printing Officer	17	1
21.	Graphic Artist	17	1
22.	Asstt Accounts Officer	16	1
23.	PA to Director General	16	1
24.	Superintendent (Reprographic Unit)	16	1
25.	Superintendent (Admn)	16	1
26.	Asstt. Scientific Information Officer	16	3
27.	Asstt. Documentation Officer	16	2
28.	Asstt: Programmer	16	3
29.	Asstt. Manager Reprographic Unit	16	1
30.	Asstt. Printing Officer	16	3
31.	Accountant	16	1
Total:			48
Supporting Staff			110
Total Strength:			158

Pakistan Scientific & Technological Information Center (PASTIC) Organizational Chart

CHAIRMAN, PSF

DIRECTOR GENERAL, BS-21

DIRECTOR, BS-20



AUDITOR'S REPORT

CHAPTER – 3

PAKISTAN SCIENCE FOUNDATION FINANCIAL STATEMENTS JUNE 30, 2007

AUDITORS' REPORT TO THE BOARD OF TRUSTEES

We have audited the annexed balance sheet of M/s PAKISTAN SCIENCE FOUNDATION as at June 30, 2007 and the related receipts and expenditure statement, cash flow statement and statement of changes in accumulated fund together with notes forming part thereof for the year then ended.

It is the responsibility of the management to establish and maintain a system of internal control, and prepare and present the financial statements in conformity with the approved accounting standards as applicable in Pakistan. Our responsibility is to express an opinion on these statements based on our audit.

We conducted our audit in accordance with the auditing standards as applicable in Pakistan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatements. An audit includes examining, on a test basis, evidence supporting the amount and disclosures in the financial statements. An audit also includes assessing the accounting policies used and significant estimates made by management, as well as, evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion and after due verification, we report that;

In our opinion and to the best of our information and according to the explanation given to us, the financial statements give the information as required and present fairly in all material respects the financial position of the Foundation as at June 30, 2007 and of its surplus/(deficit) and cash flow for the year then ended in accordance with the approved accounting standards as applicable in Pakistan.

Islamabad ; 24th September, 2007


2/12/07.
(ILYAS SAEED & CO.)
Chartered Accountants

**PAKISTAN SCIENCE FOUNDATION
BALANCE SHEET
AS AT JUNE 30, 2007**

GRANTS & LIABILITIES			NOTE	2007 RUPEES	2006 RUPEES	PROPERTY & ASSETS			NOTE	2007 RUPEES	2006 RUPEES
GENERAL FUND	3	26,581,415		21,865,052	FIXED ASSETS At Cost less Depreciation	7	72,611,475	18,817,994			
RESEARCH SUPPORT GRANT	4	87,325,343		69,862,611	DEVELOPMENT PROJECTS At Cost less Depreciation	8	14,418,585	11,921,118			
DEVELOPMENT FUND GRANTS	5	14,620,787		12,125,320	RESEARCH PROJECTS IN PROGRESS	4	83,325,313	69,862,611			
					LONG TERM DEPOSITS	9	1,617,195	1,617,195			
CURRENT LIABILITIES					CURRENT ASSETS						
Accrued & Other Liabilities	6	1,927,376		333,258	Advances, Deposits & Prepayments	10	1,110,996	845,066			
					Cash & Bank Balances	11	2,851,329	1,120,256			
							4,262,325	1,965,322			
		<u>126,254,921</u>		<u>104,184,210</u>			<u>126,254,921</u>	<u>104,184,210</u>			

Note: The annexed notes form an integral part of these financial statements.

N. J. Butt
CHAIRMAN 7/12/07

TRUSTEE *[Signature]*
5-12-07

Approved: September 11, 2007

[Signature]

**PAKISTAN SCIENCE FOUNDATION
RECEIPT AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED JUNE 30, 2007**

	<u>NOTE</u>	<u>2007 RUPEES</u>	<u>2006 RUPEES</u>
RECEIPTS			
Grant From Federal Government		85,000,000	57,754,000
Other Income		24,731	49,189
		85,024,731	57,803,189
EXPENDITURES			
Statutory Scientific Functions	12	32,734,453	24,234,772
Administrative Expensive	13	47,999,701	34,400,045
		80,734,154	58,634,817
SURPLUS / (DEFICIT) OF RECEIPTS OVER EXPENDITURE		4,290,577	(831,628)
PRIOR YEAR ADJUSTMENTS	14	225,786	33,588
NET SURPLUS / (DEFICIT) OF RECEIPTS OVER EXPENDITURE		4,516,363	(798,040)

Note : The annexed notes form an integral part of these financial statements.

TRUSTEE _____
Islamabad, September 24, 2007

CHAIRMAN _____

N. S. P. P. P.
7/12/07

**PAKISTAN SCIENCE FOUNDATION
CASH FLOW STATEMENT
FOR THE YEAR ENDED JUNE 30, 2007**

	2007 RUPEES	2006 RUPEES
CASH FLOW FROM OPERATING ACTIVITIES		
Surplus / (Deficit) for the year	4,516,363	(798,040)
Adjustment for non-Cash Charges		
Depreciation - Fixed Assets	1,894,217	1,076,572
Adjustment of Balance	-	-
Depreciation - Development Projects	2,789,766	2,383,569
Surplus / (Deficit) Before Working Capital Changes	4,683,983	3,460,142
	9,200,346	2,662,101
Working Capital Changes		
<i>increase / decrease in current assets</i>		
Increase in Long Term Deposits	-	20,000
Decrease In Advances and Prepayments	(565,930)	51,964
	(565,930)	71,964
<i>increase / decrease in current liabilities</i>		
Increase In Accrued and Other Liabilities	1,594,119	(318,691)
	1,594,119	(318,691)
Net Working Capital Changes	1,028,189	(246,727)
NET CASH FLOW FROM OPERATING ACTIVITIES	10,228,535	2,115,374
CASH FLOW FROM INVESTING ACTIVITIES		
Purchases of Fixed Assets	(10,991,929)	(299,087)
NET CASH FLOW FROM INVESTING ACTIVITIES	(10,991,929)	(299,087)
CASH FLOW FROM FINANCING ACTIVITIES		
Development Fund Grants - Net	2,497,167	(3,274,830)
NET CASH FLOW FROM FINANCING ACTIVITIES	2,497,167	(3,274,830)
NET INCREASE / (DECREASE) IN CASH AND CASH EQUIVALENTS	1,731,073	(1,158,543)
CASH AND CASH EQUIVALENTS AT THE BEGINNING OF THE YEAR	1,120,256	2,278,800
CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR	2,851,329	1,120,256

Trustee
General Secretary 2007

N.T. Pasha
CHAIRMAN
7/12/07

PAKISTAN SCIENCE FOUNDATION
STATEMENT OF CHANGES IN ACCUMULATED FUND
AS AT JUNE 30, 2007

PARTICULARS	2007 RUPEES	2006 RUPEES
Balance as at July 01	21,865,052	22,663,092
Surplus / (Deficit) for the year	4,516,363	(798,040)
Balance as at June 30	<u>26,381,415</u>	<u>21,865,052</u>

TRUSTEE _____
 Islamabad September 24, 2007
 5-12-07

N. J. P. P. P. P.
 CHAIRMAN _____
 7/12/07

PAKISTAN SCIENCE FOUNDATION
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED JUNE 30, 2007

1. **THE FOUNDATION AND ITS OPERATIONS**

Pakistan Science Foundation is a statutory organization established under Pakistan Science Foundation Act, 1973 on February 02, 1973. The main objects of its establishment are to promote and finance scientific activities having a bearing on the socio-economic needs of the country.

2. **SIGNIFICANT ACCOUNTING POLICIES**

These financial statements comply with International Accounting Standards, where applicable, in all material respects. The principal accounting policies, which have been adopted in the preparation of these financial statements, are as follows: -

2.1 **ACCOUNTING CONVENTION**

These financial statements have been prepared under 'historical cost convention' and do not reflect the impact of specific price changes and the general level of prices.

2.2 **GRANTS RECEIVED**

The Grants from the Government of Pakistan have been accounted for on receipt basis

2.3 **RESEARCH SUPPORT GRANT**

The Research Support Grant has been accounted for on payment basis.

2.4 **FIXED ASSETS**

Fixed assets have been valued at cost less accumulated depreciation except leasehold land, which is stated at cost. Depreciation on fixed assets is charged on reducing balance method. Full year's depreciation is charged on assets acquired during the year and no depreciation is charged on assets disposed off during the year.

Maintenance and normal repairs are charged to income as and when incurred. Major renewals and improvements are capitalized. Gains and losses on disposal of assets are taken to profit and loss account.

2.5 **TAXATION**

The Foundation enjoys tax exemption. Thus, no charge of tax is provided for in the accounts for the period.

		2007 RUPEES	2006 RUPEES
3	GENERAL FUND		
	Balance As On July 01	21,865,052	22,663,092
	Surplus / (Deficit) For The Year	4,516,363	(798,040)
		<u>26,381,415</u>	<u>21,865,052</u>
4	RESEARCH SUPPORT GRANT		
	Balance As At July 01	69,862,611	71,296,146
	Add: Disbursements During The Year	4.1 16,897,949	12,563,878
		86,760,560	83,860,024
	Less: Projects Completed During The Year	4.2 2,809,025	2,945,996
	Less: Expenses For Projects	4.3 626,192	11,051,417
		<u>83,325,343</u>	<u>69,862,611</u>
4.1	Disbursements During The Year		
	Institutional Support	300,000	350,000
	Biotech Sciences	4,603,336	371,491
	Evaluation Fee	148,800	-
	Physical Sciences	1,151,152	684,212
	Chemical Sciences	1,958,015	1,534,902
	Biological Sciences	4,046,282	3,314,112
	Farth Sciences	229,090	425,142
	Environmental Sciences	427,828	1,672,845
	Engeneering Sciences	1,590,807	1,279,242
	Agricultural Sciences	626,414	2,323,746
	Medical Sciences	1,638,833	336,320
	Board / Committee Meeting	177,392	271,866
		<u>16,897,949</u>	<u>12,563,878</u>
4.2	Projects Completed During The Year		
	Biotech Sciences	2,809,025	-
	Agricultural Sciences	-	2,945,996
		<u>2,809,025</u>	<u>2,945,996</u>
4.3	Expenses For Projects During The Year		
	Institutional Support	300,000	350,000
	Board / Committee Meeting	177,392	271,866
	Evaluation Fee	148,800	-
	Prior Year Adjustment - Institutional Support	-	8,739,090
	Prior Year Adjustment - Board / Committee Meeting	-	1,604,210
	Prior Year Adjustment - Honoraria / Evaluation Fee	-	86,251
		<u>626,192</u>	<u>11,051,417</u>
5	DEVELOPMENT FUND GRANT		
	Opening Balance	12,123,320	15,398,150
	Add: Development Project Grants	5.1 26,450,000	21,203,000
	Less: Development Project Grants Refunded	-	(862,046)
		<u>38,573,320</u>	<u>35,739,104</u>
	Less: Development Project Functions	5.2 23,952,533	23,615,784
	Closing Balance	5.4 14,620,787	12,123,320
5.1	Development Project Grants		
	Financial Support To Scientific Societies	9,500,000	7,000,000
	Popularization of Sciences In Rural Areas	-	-
	Participation of Scientists And Technologists In Conferences	6,000,000	2,455,000
	Career Development of Young Scientists And Technologists	-	900,000
	Funding of Scientific Research In Universities And Other Organizations	5,950,000	3,000,000
	Automation of PSF Research Support Program & Other Activities	5,000,000	-
	Research Program for Active Scientists & Technologists	-	7,848,000
		<u>26,450,000</u>	<u>21,203,000</u>

	2007	2006
5.2 Project Wise Development Expenditure		
Financial Support To Scientific Societies	9,500,000	7,000,000
Popularization of Sciences In Rural Areas	-	-
Participation of Scientists And Technologists In Conferences	6,000,000	2,455,000
Career Development of Young Scientists And Technologists	-	900,000
Funding of Scientific Research In Universities And Other Organizations	5,950,000	3,000,000
Research Program for Active Scientists & Technologists	5,000,000	7,848,000
Peer Review Work NCST Projects	-	16,300
Peer Review Work PTCL Projects	-	72,200
	<u>26,450,000</u>	<u>21,291,500</u>
Less Charged To Fixed Assets	(5,287,233)	(59,285)
Less Charged To Fixed Assets From Payables	-	-
Add Depreciation	2,789,766	2,383,569
5.3	<u><u>23,952,533</u></u>	<u><u>23,615,784</u></u>
5.3 Development Project Functions		
TA/DA & Evaluation Fee	1,577,679	1,747,038
Financial Support To Societies	9,458,771	6,977,785
Grants For Research	4,558,897	10,788,690
Registration Fee	547,627	271,300
Postage & Stationary	215,866	31,604
Advertisement	426,572	-
Utilities	-	-
Depreciation	2,789,766	2,383,569
Salary to Staff	-	88,333
Entertainment	-	-
Vehicle Running And Maintenance	-	-
Bank Charges	-	300
Miscellaneous	72,544	265,830
Amount Surrendered To FTO / Treasury	3,576,968	538,000
Living Expenses	727,843	475,663
Material & Supplies Contingent Expense	-	48,272
	<u>23,952,533</u>	<u>23,615,784</u>
5.4 Reconciliation of Closing Development Fund Grant		
Closing Balance	<u>14,620,787</u>	<u>12,123,320</u>
Represented By		
Fixed Assets (Net)	14,418,585	11,921,118
Cash At Banks	287,063	287,063
Prior Year Adjustment	(84,861)	(84,861)
	<u>14,620,787</u>	<u>12,123,320</u>
6 ACCRUED AND OTHER LIABILITIES		
Accrued Expenses	301,095	189,144
Audit Fee Payable	20,000	20,000
Security Deposits	30,300	27,500
Other Liabilities	1,575,981	96,614
	<u>1,927,376</u>	<u>333,258</u>

7 **FIXED ASSETS**

PARTICULARS	COST			TOTAL 30-06-2007	RATE %	DEPRECIATION				BOOK VALUE AS AT 30-06-2007
	AS AT 01-07-2006	ADDITIONS	(DELETION)			AS AT 01-07-2006	FOR THE YEAR	ADJUSTMENT FOR DISPOSAL	ACCUMULATED AS AT 30-06-2007	
LAND - LEASEHOLD	3,713,418	-	-	3,713,418	0	-	-	-	-	3,713,418
BUILDING	19,484,540	-	-	19,484,540	5	8,401,732	554,140	-	8,955,872	10,528,668
MOTOR VEHICLES	3,706,809	1,391,706	-	5,098,515	20	3,546,968	310,309	-	3,857,277	1,241,238
OFFICE EQUIPMENT	4,145,189	510,253	-	4,655,442	15	3,068,835	240,991	-	3,309,826	1,345,616
SCIENCE EQUIPMENT	2,919,275	3,638,765	-	6,558,040	15	2,073,336	677,706	-	2,751,042	3,807,000
FURNITURE & FIXTURE	2,222,885	110,998	-	2,333,883	6	1,204,984	67,754	-	1,272,738	1,061,145
AIR CONDITIONERS	191,974	-	-	191,974	20	191,967	601	-	192,568	2,406
LIBRARY BOOKS & FILMS	1,580,789	35,974	-	1,616,763	5	662,061	17,755	-	709,798	906,965
RUPEES 2007	37,967,679	5,707,696	-	43,675,375		19,149,885	1,891,217	-	21,041,102	22,634,273
RUPEES 2006	17,728,077	239,802	-	17,967,879		18,073,313	1,076,572	-	19,149,885	18,817,994

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8 **DEVELOPMENT PROJECTS**

PARTICULARS	COST			TOTAL 30-06-2007	RATE %	DEPRECIATION				BOOK VALUE AS AT 30-06-2007
	AS AT 01-07-2006	ADDITIONS	(TRANSFER)/ (DELETION)			AS AT 01-07-2006	FOR THE YEAR	ADJUSTMENT	ACCUMULATED AS AT 30-06-2007	
MOTOR VEHICLES	6,494,293	-	-	6,494,293	20	3,451,023	608,654	-	4,059,677	2,434,616
OFFICE EQUIPMENT	13,904,832	5,047,358	-	18,952,190	15	5,426,321	2,028,880	-	7,455,201	11,496,989
COMPUTER EQUIPMENT	1,114,013	186,055	-	1,300,068	33	878,294	139,185	-	1,017,480	282,588
FURNITURE & FIXTURE	199,287	53,820	-	253,107	6	35,669	13,046	-	48,715	204,392
RUPEES 2007	21,712,425	5,287,233	-	26,999,658		9,791,307	2,789,766	-	12,581,073	14,418,585
RUPEES 2006	21,653,140	59,283	-	21,712,423		7,407,737	2,383,569	-	9,791,307	11,921,118

	2007	2006
9 LONG TERM DEPOSITS		
Electricity	1,472,195	1,472,195
Gas	145,000	145,000
Mobile Phone	-	-
	<u>1,617,195</u>	<u>1,617,195</u>
10 ADVANCES & PREPAYMENTS		
Advances to Staff		
- For Vehicles	150,000	-
- For House Rent	1,245,996	845,066
- For Cycle	15,000	-
Advances For Fabrication	-	-
	<u>1,410,996</u>	<u>845,066</u>
11 CASH AND BANK		
Cash At Bank - Saving Accounts (Fund)	1,273,892	730,468
Cash At Bank - Current Accounts	112,230	67,795
Cash At Bank - PSF Development Fund Current Account	287,063	287,063
Cash In Hand	30,325	31,936
Cash At Bank - Current Accounts (Expo)	889,916	-
Cash At Bank - Current Accounts (Fair)	233,916	-
Cash At Bank - Current Accounts (Nobel)	20,993	-
UNESCO Coupons	2,994	2,994
	<u>2,851,329</u>	<u>1,120,256</u>
12 STATUTORY SCIENTIFIC FUNCTIONS		
Research Support Grant	4.1 16,897,949	12,563,878
Research Support Functions	-	50,000
Scientific Societies & Professional Bodies	280,000	205,000
Scientific Conferences Meetings & Seminars	840,000	520,000
Operation of Science Caravan	7,026,795	6,760,615
International Liaison	-	626,410
Science Promotion Activities	1,828,183	1,190,183
Utilization of Results of Research & Transfer of Technology & Pilot Plant Study	2,190,473	662,689
Science Fair	3,550,000	-
Awards Prizes & Fellowship	72,000	362,316
Nobel Laureates	-	1,000,000
Information Documentation, Publication & Library Materials	-	-
Subscription to International Organization & UNESCO Coupons	-	25,448
Science Centre Herbaria Plantaria	49,053	268,233
	<u>32,734,453</u>	<u>24,234,772</u>
13 ADMINISTRATIVE EXPENSES		
Salaries & Other Benefits	32,038,941	23,709,410
Travelling	328,192	255,066
House Rent Facility	5,194,957	4,427,956
Ground Rent To CDA	1,333,745	15,722
Electricity, Gas & Water	1,319,483	857,561
Postage, Telephone & Telegram	1,477,423	1,265,351
Printing & Stationery	388,120	263,674
Vehicle Running & Maintenance	1,540,607	1,323,192
Newspaper & Advertisement	89,007	72,319
Livries & Uniforms	62,550	21,440
Entertainment	157,750	161,192
Repair & Maintenance of Office Equipment	111,155	84,792
Audit Fee	20,000	20,000
Professional Charges	220,000	260,000
Depreciation	1,894,217	1,076,572
Maintenance of Office Building	873,850	226,803
Staff Welfare Fund	300,000	100,000
Advertisement & Publicity	460,419	164,716
Miscellaneous	89,255	104,279
	<u>47,999,701</u>	<u>31,400,645</u>

	2007 RUPEES	2006 RUPEES
14 PRIOR YEAR ADJUSTMENTS		
Development Functions Expenses	-	(25,820)
Mobile Expenses Recovered	-	(7,708)
Contingent Expenses	(208,733)	-
Other Income	(17,053)	-
	<u>(225,786)</u>	<u>(33,528)</u>

15 FINANCIAL INSTRUMENTS AND RELATED DISCLOSURE

DESCRIPTION	INTEREST / MARK-UP BEARING			NON INTEREST / MARK-UP BEARING			TOTAL	
	Maturity up to one year	Maturity after one year	Sub Total	Maturity up to one year	Maturity after one year	Sub Total	2007	2006
FINANCIAL ASSETS								
Advances Deposits & Prepayment	-	-	-	1,410,996	-	1,410,996	1,410,996	815,066
Cash & Bank Balances	-	-	-	2,851,329	-	2,851,329	2,851,329	1,126,286
	-	-	-	1,262,275	-	1,262,275	1,262,275	1,941,322
FINANCIAL LIABILITIES								
Expenses Payable	-	-	-	1,927,376	-	1,927,376	1,927,376	333,258
	-	-	-	1,927,376	-	1,927,376	1,927,376	333,258

15.1 Financial instruments and risk management

Overall, risks arising from the Foundation's financial instruments are limited.

15.1.1 Concentration of Credit Risk

Credit risk represents the accounting loss that would be recognized at the reporting date if counter parties failed completely to perform as contracted. The Foundation applies credit limit to its beneficiaries and does not have significant exposure to individual beneficiaries.

15.1.2 Interest Rate Risk

Interest rate risk arises from the possibility that changes in interest rates will effect the value of financial instruments. The Foundation is not exposed to any Interest Rate Risk. The effective interest rates as at June 30, 2007 for the financial instruments are given in the relevant notes, if any.

15.1.3 Foreign Exchange Risk Management

Foreign currency risk arises mainly where receivables and payables exist due to transaction with foreign undertakings. The Foundation believes that it is not exposed to major foreign exchange risk.

15.2 Fair Value of Financial Instruments

The Carrying amounts of financial assets and financial liabilities approximates to their fair value.

16 NO. OF EMPLOYEES

Total number of employees at the year end

175 175

17 DATE OF AUTHORISATION OF ISSUE

These financial statements were authorized for issue on September 21, 2007 by the Board of Trustees.

18 GENERAL

- The Foundation has received a sum of Rs. 500,000,000/- as endowment fund from the Government of Pakistan. This sum being given exclusively for endowment has not been included in these financial statements.
- Figures have been rounded off to the nearest rupee.

TRUSTEE
Islamabad, November 06, 2006.

N. F. Ahmad
CHAIRMAN
7/12/07

PAKISTAN SCIENCE FOUNDATION
STATEMENT OF DEVELOPMENT FUNDS RECEIPT & EXPENDITURE
FOR THE YEAR ENDED JUNE 30, 2007

PAKISTAN SCIENCE FOUNDATION DEVELOPMENT FUND	NCSI	PSTIC	CDYST	FOSIR/IAAO	PSRA	FSSS	APRSPOA	C.G.S	PRNCST	PRP/CL	TOTAL
OPENING BALANCE	-	-	-	-	-	-	-	1,080	235,863	42,520	279,463
REFUND OF EXPENSE (Prior year adjustment)	-	-	-	-	-	-	-	-	-	-	-
FUNDS RECEIVED DURING THE YEAR	-	6,000,000	-	5,950,000	-	9,500,000	5,000,000	-	-	-	26,450,000
REFUND OF AMOUNTS TO MINISTRY	-	-	-	-	-	-	-	-	-	-	-
FUNDS AVAILABLE DURING THE YEAR	-	6,000,000	-	5,950,000	-	9,500,000	5,000,000	1,080	235,863	42,520	26,729,463
EXPENDITURE											
TA/DA & Evaluation Fee				138,552							138,552
Salary of Scientists & Technologists											-
Office Equipment		154,450					4,892,908				5,047,358
Furniture & Fixture		53,820									53,820
Computer Equipment		144,400		41,655							186,055
Office Equipment - Transferred											-
Financial Support to Societies						9,458,771					9,458,771
Grant for Research				4,558,897							4,558,897
Participation in Conferences											-
Travel Expenses (Abroad)		1,439,127									1,439,127
Evaluation Fee & Technical Meetings											-
Conference Reg. Fee		547,627									547,627
Living Expenses		727,843									727,843
Stationary & Postage		68,680		95,421		38,342	13,423				215,866
Advertisement		332,903					93,669				426,572
On Site Monitoring											-
Material, Supplies & Contingent Exp											-
Consultancy											-
Telephone											-
Salary to Staff											-
Entertainment											-
POI/Repair of Vehicles											-
Bank Charges											-
Advance for Expenses - Furniture											-
Advance for Fabrication											-
Miscellaneous		31,150		38,507		2,887					72,544
Surrendered to FTO		2,500,000		1,076,968							3,576,968
Utilities											-
Payables										(7,600)	(7,600)
Total	-	6,000,000	-	5,950,000	-	9,500,000	5,000,000	-	-	(7,600)	26,442,400
Balance	-	-	-	-	-	-	-	1,080	235,863	50,120	287,063

PAKISTAN SCIENCE FOUNDATION
STATEMENT OF STATUTORY SCIENCE FUNCTIONS RECEIPT & EXPENDITURE
FOR THE YEAR ENDED JUNE 30, 2007

PAKISTAN SCIENCE FOUNDATION DEVELOPMENT FUND	PSFS&TEXPO	PSFNL	FAIR	A/C 840 - 9			
				FUND A/C	UNESCO	WSD	TOTAL
OPENING BALANCE	-	-	-	415,321	299,168	15,979	730,468
FUNDS RECEIVED DURING THE YEAR M	2,000,000	1,000,000	-	-	1,102,796	60,479	1,163,275
FUNDS RECEIVED DURING THE YEAR PS	3,550,000	-	-	-	-	-	-
FUNDS RECEIVED FROM OTHERS / MISC	7,287,610	-	8,130	16,601	-	-	16,601
FUNDS AVAILABLE DURING THE YEAR	12,837,610	1,000,000	8,130	431,922	1,401,964	76,458	1,910,344
EXPENDITURE							
Construction & Fabrication	10,687,000						-
Revolving Fund Expenses	244,427						-
Fee Charges	37,181	11,560			197,200		197,200
Petrol. Oil & Lubs	213,240	119,670			38,878		38,878
Entertainment	6,650	3,088			40,456	1,436	41,892
Equipment	554,787				29,750	1,350	31,100
Bank Charges	2,280	150		1,000	175		1,175
Photography & Documantation	8,802	41,510			3,599		3,599
TA / DA	881	7,135			25,000		25,000
Stationary & Postage	240,191	120,598			895		895
Hotel Charges	76,096	441,056			52,081	10,702	62,783
Consultancy Fee		60,280					-
Advertisement	42,841	118,400				4,400	4,400
Honourarium	288,130			223,000			223,000
Miscellaneous	350,335	63,586	(17,053)		8,692	683	9,375
Contingent Expenses			(208,733)				-
Payables	(805,147)	(8,026)		(2,845)			(2,845)
Total	11,947,694	979,007	(225,786)	221,155	396,726	18,571	636,452
Balance	889,916	20,993	233,916	210,767	1,005,238	57,887	1,273,892

**PAKISTAN SCIENCE FOUNDATION
ACT-1973**

PAKISTAN SCIENCE FOUNDATION ACT 1973
National Assembly of Pakistan Islamabad, the 2nd February 1973

The following Acts of the National Assembly received the assent of the President on the 31st January 1973 and hereby published for general information.

Act No. III of 1973

An Act to provide for the establishment of the Pakistan Science Foundation.

Whereas it is expedient to provide for the establishment of the Pakistan Science Foundation and for matters ancillary there to,

It is hereby enacted as follows:-

1. **Short title, extent and commencement.** (1) This Act may be called the Pakistan Science Foundation Act, 1973.
 - 2) It extends to the whole of Pakistan
 - 3) It shall come into force at once.

2. **Definitions.** In this Act, unless there is anything repugnant in the subject or context.
 - a) "Board" means the Board of Trustees of the Foundation;
 - b) "Chairman": means the Chairman of the Foundation; and
 - c) "Foundation" means the Pakistan Science Foundation established under this Act.

3. **Establishment of the Foundation.** (1) As soon as may be after the commencement of this Act, the Federal Government may, by notification in the official Gazette, establish a Pakistan Science Foundation to promote and finance scientific activities having a bearing on the socio-economic needs of the country.
 - (2) The Foundation shall be a body corporate by the name of the Pakistan Science Foundation, having perpetual succession and a common seal, with power, subject to the provision of this Act, to acquire, hold and dispose of property, both movable and immovable. and shall be the said name sue and be sued.
 - (3) The Head Office of the Foundation shall be at Islamabad.

- 4. Functions of the Foundation:** (1) The Foundation shall function as a financing agency for
- i) The establishment of comprehensive scientific and technological information and dissemination centers;
 - ii) The promotion of basic and fundamental research in the universities and other institutions on scientific problems relevant to the socio-economic development of the country;
 - iii) The utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale;
 - iv) The establishment of science centers, clubs, museums, herbaria and planetaria,
 - v) The promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular;
 - vi) The organization of periodical science conferences, symposia and seminars;
 - vii) The exchange of visits of scientists and technologists with other countries;
 - viii) The grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country; and
 - ix) Special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific effort of the country.
- (2) The Foundation shall also:
- i) Review the progress of scientific research sponsored by it and evaluate the results of such research;
 - ii) Maintain a National Register of highly qualified and talented scientists of Pakistan including engineers and doctors, in or outside the country and to assist them, in collaboration with the concerned agencies in finding appropriate employment; and
 - iii) Establish liaison with similar bodies in other countries.
- (3) In the performance of its functions, the Foundation shall be guided on questions of policy by the instructions, if any, given to it by the Federal Government which shall be the sole judge as to whether a question is a question of policy.
- 5. Board of Trustees.** (1) The general direction, conduct and management of the affairs of the Foundation, including administration of its funds, shall vest in a Board of Trustees consisting of the following members namely;

Whole-time members

- i) the Chairman;
- ii) one eminent scientist;
- iv) the Director of Finance;

to be appointed by the President;

Part-time members

- iv) the Chairman of the National Science Council;
- v) four scientists to be nominated by the National Science Council; and
- vi) eleven eminent scientists to be nominated by the President

(2) The remuneration and other terms and conditions of service of the Chairman and the two other whole-time members of the Board shall be such as may be determined by the President.

6. Chairman of the Board (1) The Chairman of the Board shall be the Chairman of the Foundation and shall be appointed from amongst the eminent scientists of the country having experience of research and scientific administration.

(2) The Chairman shall, subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment.

(3) The President may at any time terminate the appointment of the Chairman without notice and without assigning any reason.

7. Term of Members of the Board. (1) The members of the Board, other than the ex-officio member, shall subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment or re-nomination, as the case may be.

(2) A member, other than an ex-officio member, may at any time resign his office by writing under his hand addressed to the President but shall continue to perform his functions until his resignation has been accepted.

(3) The President may at any time terminate the appointment or, as the case may be, nomination of any member of the Board without notice and without assigning any reason.

8. Meetings of the Board. (1) The meeting of the Board shall be held at least twice a year and shall be presided over by the Chairman or, in his absence, by its whole-time scientist member.

(2) All decisions at a meeting of the Board shall be taken by a majority of the votes of the members present and voting.

9. **Quorum at the Meeting of the Board.** To constitute a quorum at a meeting of the Board not less than nine members shall be present.

10. **Executive Committee.** There shall be an Executive Committee consisting of the Chairman and the two whole-time members of the Board.

11. **Delegation of Powers.** The Board may, from time to time, delegate the Chairman or the Executive Committee such of its power and functions as it may consider necessary.

12. **Adhoc Committees.** The Foundation may set up adhoc committees consisting of university professors and other leading scientists and experts to scrutinize applications for financial assistance for carrying out scientific research submitted to the Foundation by the universities or other institutions or by individual scientific workers or groups of scientific workers and to review and evaluate the results of research sponsored by the Foundation.

13. **Funds.** The funds of the Foundation shall consist of:

- a) Grants made by the Federal Government and the Provincial Governments;
- b) Donation and endowments; and
- c) Income from other sources

14. **Budget.** The Foundation shall cause to be prepared and approve a statement of its receipt and expenditure for each financial year.

15. **Accounts and Audit.** (1) The funds of the Foundation shall be kept in a personal ledger account of the Foundation with the State Bank of Pakistan or with any Branch of the National Bank of Pakistan acting as an agent of the State Bank.

(2) The accounts of the Foundation shall be maintained in such form and manner as the Auditor-General of Pakistan may determine in consultation with the Federal Government.

(3) The accounts of the Foundation shall be audited by one or more auditors who are chartered accountants within the meaning of the Chartered Accountants Ordinance, 1961 (X of 1961) and are appointed by the Foundation in consultation with the Auditor-General of Pakistan.

16. Appointment of Officers and Servants. (1) The Foundation may appoint such officers and servants and engage such consultants or experts, as it may consider necessary for the efficient performance of its functions, on such terms and conditions as it may deem fit.

(2) In fixing the terms and conditions of service of its officers and servants, the Foundation shall, as nearly as may be, conform to the scales of pay, allowances and conditions of service applicable to the corresponding class of employees of the Federal Government.

17. Annual Reports. (1) The annual report of the Foundation, which shall among other things, clearly bring out the benefits accruing to the nation as a result of the activities sponsored by the Foundation, shall be prepared by the Chairman and submitted through the Board to the Federal Government alongwith the audited accounts of the Foundation.

(2) The annual report alongwith the audited accounts of the Foundation shall be laid before the National Assembly.

18. Regulations. The Foundation may make regulations for the efficient conduct of its affairs.

19. Repeal. The Pakistan Science Foundation Ordinance, 1972 (LII of 1972), is hereby repealed.

**LIST OF PROJECTS APPROVED
DURING 2006-07**

LIST OF PROJECTS APPROVED DURING THE YEAR 2006-2007

S. No.	Title & No. Project	Name & Address of PI Institution	Project Cost (Rs.)
AGRICULTURAL SCIENCES			
1.	Effect of mineral and organic nitrogen on yield and nitrogen nutrition of deciduous palm fruit orchards. PSF/Res/F-NIFA/Agr (310)	Syed Mahmood Shah, Principal Scientist, National Institute for Food & Agriculture (NIFA), Peshawar.	9,61,860/-
2.	Potential use of CO ₂ as foliar fertilizer for wheat yield enhancement under salt stress: strategies for the future. PSF/Res/P-AU/Agr (319)	Dr. Abdul Wahid, Associate Professor, University of Agriculture, Faisalabad.	5,98,740/-
BIOLOGICAL SCIENCES			
3.	Preparation of products of economic importance, chitin (chitosan) from shell fish waste. PSF/Res/S-PCSIR/Bio (221)	Dr. Khalid Jamil, Principal Scientific Officer, PCSIR Labs. Complex, Karachi.	4,46,464/-
4.	Selection of probiotic cultures for yogurt making. PSF/Res/P-UAAR/Bio (264)	Dr. Tariq Masud, Chairman, Dept. of Food Technology, University of Arid Agriculture, Rawalpindi.	5,54,880/-
5.	Formulation of low cost quality fish feed from indigenous raw materials and its effects on growth and survival of major carps. PSF/Res/S-SU/Bio (287)	Prof. Dr. Naeem Tariq Narejo, Dept. of Fresh Water Biology & Fisheries, University of Sindh, Jamshoro.	5,00,820/-
6.	Pharmacological evaluation of two anti-hyperlipidaemic indigenous medicinal plants in albino rabbits and determination of their mechanism of action. PSF/Res/P-AU/Bio (355)	Dr. Ijaz Javed Hasan, Associate Professor, Department Physiology & Pharmacology, University of Agriculture Faisalabad.	10,25,100/-
7.	Hatchery culture of commercially important oysters. PSF/Res/S-KU/Bio (360)	Dr. Ghazala Siddique, Center of Excellence in Marine Biology, University of Karachi, Karachi.	9,93,480/-

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| 8. | Role of testosterone and cytokines interactions in fertility regulation.
PSF/Res/S-AKU/Bio (365) | Dr. Arif Siddiqui,
Associate Professor,
The Agha Khan University,
Karachi. | 10,04,190/- |
| 9. | Studies on effects of indigenous medicinal plants on hypercholesterolemia, hypertension and endothelial dysfunction.
PSF/Res/S-AKU/Bio (377) | Prof. Dr. Anwar-ul-Hassan Gilani
Department of Biological & Biomedical Sciences,
The Agha Khan University,
Karachi | 10,62,116/- |

BIOTECHNOLOGY & GENETIC ENGINEERING

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| 10. | Development of hyper producer cephalosporin C producing strain of <i>acromonium chrysogum</i> by RNA interference techniques.
PSF/Res/P-NIBGE/Biotech/Ind (47) | Dr. Kalsoom Akhtar,
Principal Scientist,
Nuclear Institute of Biotechnology & Genetic Engineering (NIBGE),
Faisalabad. | 9,48,439/- |
| 11. | Cloning expression and characterization of INGAP encoded gene: A respective means of amelioration of diabetes.
PSF/Res/P-NIBGE/biotech/Med (58) | Dr. Javed Anwar Qureshi,
Head, Health Biotechnology Div.
Nuclear Institute of Biotechnology & Genetic Engineering (NIBGE),
Faisalabad. | 11,48,520/- |
| 12. | Studies on genetics and mutations of low density lipoprotein receptor gene (LDRL); implication in diagnosis, prognosis, treatment and management of familial hypercholesterolemia in Pakistan.
PSF/Res/P-NIBGE/biotech/Med (76) | Dr. Shahid M. Baig
National Institute of Biotechnology & Genetic Engineering (NIBGE),
Faisalabad. | 10,60,800/- |
| 13. | Use of induced somatic mutation & biotechnology for the genetic improvement of sugar cane (<i>saccharum</i> sp.) hybrid.
PSF/Res/S-NIA/Biotech (134) | Mr. Imtiaz Ahmed Khan,
Principal Scientist,
Nuclear Institute of Agriculture (NIA), Tando Jam. | 7,90,500/- |
| 14. | Genetic analysis and field evaluation of potato (<i>solanum tuberosum</i>) genotype in Azad Kashmir. | Prof. Dr. Fareed Khan,
Chairman,
Dept. of Plant Breeding & Molecular Genetics, | 7,19,100/- |

PSF/Res/Biotech/Bio (196)

Faculty of Agriculture,
University College of
Agriculture, Rawalakot,
Azad Kashmir.

15. In vitro development of salt tolerance in rice.
PSF/Res/Biotech/ (209)
- Dr. Safdar Hussain Shah,
Assistant Professor,
NWFP Agricultural University,
Peshawar.
- 11,62,800/-

CHEMICAL SCIENCES

16. Development of processing method for pectin as value added product from citrus peel waste.
PSF/Res/F-NIFA/Chem (138)
- Mr. Amal Badshah
Principal Scientist,
Nuclear Institute for Food &
Agriculture (NIFA), Peshawar.
- 8,51,781/-
17. Studies of vanadium-organic ligand systems containing peptide linkage: synthesis, structural elucidation and biological applications.
PSF/Res/C-QU/Chem (270)
- Prof. Dr. Saqib Ali
Dept. of Chemistry,
Quaid-i-Azam University,
Islamabad.
- 8,06,820/-
18. Stereo-selective total Synthesis of some antimalarial, antituberculous, antifungal and cytotoxic dihydroisocoumarin metabolites.
PSF/Res/C-QU/Chem (395)
- Dr. Amer Saeed Bahtti
Assistant professor,
Quaid-i-Azam University,
Islamabad.
- 7,07,880/-

ENGINEERING

19. Critical analysis and impact of contrasting hydrological regimes in the upper Indus basin on water resources of Pakistan.
PSF/Res/P-CEWRE/Engg (95)
- Engr. Dr. S. M. Saeed Shah
Head, Hydrology Division,
University of Engineering &
Technology, Lahore.
- 8,17,020/-
20. Design and fabrication of a laboratory size screw extruder for conversion of agro-based materials into value added food and feed products.
PSF/Res/F-NIFA/Engg (216)
- Dr. Maazullah Khan,
Senior Engineer,
Nuclear Institute for Food &
Agriculture (NIFA), Peshawar.
- 7,18,080/-

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| 21. | Synthesis and characterization of piezo-electric BaTiO ₃ crystals.
PSF/Res/P-KRI/Engg (284) | Dr. Muhammad Muneeb Asim,
Senior Scientific Officer,
Dr. A. Q. Khan Research Labs
Rawalpindi. | 11,09,760/- |
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MEDICAL SCIENCES

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| 22. | Helicobacter pylori infection in children: Prevalence and genetic characterization of local strain.
PSF/C-PINSTECH/Med (207) | Dr. Rakhshanda Bilal,
Deputy Chief Scientist,
RIAD,
PINSTECH, Islamabad. | 9,79,200/- |
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| 23. | Deficiency of Vitamins B6, B12, and Folic Acid
PSF/Res/S-AKU/Med (210) | Prof. Dr. Mohammad Perwaiz Iqbal, Dept. of Biochemistry,
The Aga Khan University,
Karachi. | 12,09,720/- |
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| 24. | Epidemiological investigation of pertussis infection in Pakistan the first ever report of this type from Pakistan.
PSF/Res/C-COMSATS/Med (220) | Prof. Dr. S. Habib Bokhari
Assistant Professor,
Department of Biosciences,
COMSATS Institute of
Information Technology,
Islamabad | 10,32,240/- |
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PHYSICS

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| 25. | AC magnetic measurement.
PSF/Res/P-GCU/Phy (246) | Dr. Salamat Ali
Associate Professor,
Department of Physics,
University of the Punjab, Lahore. | 12,50,296/- |
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**DETAILS OF MONITORING AND
EVALUATION OF ON-GOING
PROJECTS DURING 2006-07**

Annexure-III

DETAILS OF MONITORING AND EVALUATION OF ON-GOING PROJECTS DURING 2006-07

I NON-DEVELOPMENT BUDGET

a. Semi-annual Reports

S. No.	Project No.	Project Title	Reports
1	P-AU/Agr (316)	Survey, biology and integrated control measures of citrus: slow decline and spreading decline of litchi (<i>Litchi chinensis</i> Sonn) in Punjab.	1st
2	P-AU/Agr (318)	An efficient and economic means of enhancing wheat yield under water deficit conditions.	1st
3	F-NIFA/Bio (141)	Mushroom cultivation and popularization as cottage industry in NWFP, Pakistan.	1st
4	S-KU/Bio (342)	Biology of edible crabs (<i>portunus pelagicus</i> and <i>P. sanuinentus</i>) occurring in the coastal waters of Karachi.	1st
5	P-AU/Bio (352)	Molecular epidemiology and immuno-histochemistry of enteropathogenic <i>Escherichia coli</i> (EPEC) in bovine and human neonates.	1st
6	P-AU/Biotech/Med (24/1)	Technologies development for the production of gonadotropin from animal sources	1st
7	P-NIAB/Biotech/Agr (44)	Characterization of Pakistani wheat varieties by micro satellite markers.	1st
8	P-NIBGE/Biotech/Agr (52)	Bacteriocin production and its role in completion in rhizbial inoculants from a sustainable agriculture perspective.	1st
9	B-BU/Chem (252)	Clinical applications of electrogenerated chemiluminescence detection using tris (2-2 bipyridine) ruthenium (II) flow injection analysis.	1st
10	S-PCSIR/Chem (292)	Economical viability of pesticidal residues and PCBs free fishery products.	1st
11	S-PCRWR/Engg (184)	Crop response under different water management strategies in irrigation areas of Sindh.	1st
12	P-DGF/Env (65)	Pollution in Hadiara drain-its direct and indirect impact on human health through food chain.	1st
13	F-AU/Env (202)	Residual behavior of pesticides in crops.	1st

14	C-QU/Phy (129)	An investigation of collection, excitations in density modulated nano structure in a magnetic field.	1st
15	P-AU/Bio (347)	Development & molecular characterization of gametocyte vaccine (s) (local isolate) against avian coccidiosis.	2nd
16	P-UAA/Biotech/ (220)	Tissue culture and genetic transformation studies in banana (musa) for disease eradication/resistance.	2nd
17	F-PU/Env (201)	Heavy metal contamination of soil water, fruit and vegetables through sewage water.	2nd
18	AJK-UCR/Agr (275)	Studies on the establishment & improvement of clovers <i>Trifolium Sp.</i> for nitrogen availability and soil condition of Azad Kashmir.	3rd
19	C-QU/Chem (203)	Synthesis of variably substituted chalcones, thiochalcones, iminochalcones having potential industrial applications.	3rd
20	C-QU/Phy (18)	Magnetic and structural studies of nano-particle.	3rd

b. First Annual Reports

21	P-AU/Agr (316)	Survey, biology and integrated control measures of citrus slow decline and spreading decline of litchi (<i>Litchi chinensis</i> Sonn) in Punjab.
22	P-UAA/Biotech/ (220)	Tissue culture and genetic transformation studies in banana (<i>musa</i>) for disease eradication/resistance.
23	F-UET/Engg (87)	Design and development of sugarcane planter for small and medium land holders of Pakistan.
24	ILG/026/03	Establishment of pilot green tea processing plant.
25	ILG/034/03	CNG cylinders, design and manufacturing.
26	F-AU/Env (202)	Residual behavior of pesticides in crops.

c. Second Annual Reports

27	P-AU/Bio (347)	Development & molecular characterization of gametocyte vaccine (s) (local isolate) against avian coccidiosis.
28	P-NIBGE/Biotech/ Med (32)	Mutation breeding of <i>Lactobacillus delbrueckii</i> for hyper production of lactic acid for the development of bio-degradable polymers. (1st & 2nd annual combine)
29	P-NIBGE/Biotech/ Med(43).	DNA fingerprinting approaches to study drought tolerance in cotton.
30	F-PU/Env (201)	Heavy metal contamination of soil water fruit and vegetables through sewage water.

31 PSF/ILG/029/03 Pharmacognosy of medicinal plants of Pakistan (determination of active constituents).

d. Final Reports

32 P-NIAB/Agr (288) Effect of soil salinity and nitrogen availability of photosynthate and growth of wheat.

33 F-AU/Agr (295) Weed management in wheat (*Triticum aestivum* L) in NWFP.

34 F-AU/Agr (299) To assess the causes of ratoon crop failure in sugarcane and their control in NWFP.

35 P-AU/Bio (286) Taxonomy, ecology of spider communities of citrus orchards and the role of spiders as predators.

36 P-AU/Bio (300) Studies on co-culture system of buffalo embryos.

37 P-NIBGE/Bio (317) Introduction of salinity tolerance in plants through the use of halotolerance conferring genes from bacteria and fungi a transgenic approach.

38 P-AU/Bio (326) Evaluation of indigenous trivalent vaccines for the control of mastitis in buffaloes and cows.

39 S-SU/Bio (338) Taxonomy and biology of *Hieroglyphus spp.*

40 S-PCSIR/Bio (339) Assessment of omega-3 polyunsaturated fatty acid in tropical fish and shellfish.

41 P-BZU/Bio (340) Conservation biology of larks (aloclididae) in Pakistan.

42 S-KU/Bio (345) Germination capacity of stored pollen of some economically important plants and their maintenance.

43 C-QU/Bio (351) Ecology and conservation of the canids in the salt range of Pakistan with focus on Indian wolf.

44 P-LCW/Biotech/ Ind (41) Studies on biosynthesis of enzyme phytase for improvement of nutritional value of defatted oil seed cakes in poultry feed.

45 S-SU/Earth (65) Detection of saline intrusions in the right bank coastal sediments of Southern Sindh.

46 P-CRWRE/Engg (77) Stochastic flood risk zoning.

47 C-PCRWR/Engg (78) Assessment of water resources and development of strategic water utilization plan in Potohar region for its sustainable use.

48 C-PINSTECH/ Engg (39) Study of bonding between zircalloy and stainless steel.

49 ILG/023/03 (Non-Dev) Application of solar drying technology for apricots design and development of solar hybrid dryer (prototype)

50 ILG/023/03-1(Non-Dev) Commercial production of solar dryers.

51	ILG/017/03 (Non-Dev)	Non-chemical control of wild boar population in the area Islamabad.
52	B-BU/Chem (346)	Leishmania and leishmaniasis in Pakistan.
53	P-PU/Phy (117)	Investigation in CP violation.
54	C-QU/Phy (121)	Preparation & characterization of CD TE-based solar cell and related thin film materials.
55	C-QU/Phy (130)	Study of soliton formation ITG modes and energy deposition by cluster-ion beams in dust contaminated plasma.

II. DEVELOPMENT BUDGET:

(FUNDING OF S&T RESEARCH IN UNIVERSITIES AND OTHER R&D ORGANIZATIONS)

a Semi-Annual Reports

S.No.	Project No.	Project Title	Reports
1.	R&D/ P-NIAB/Bio(183)	Production of amino acids through 3 rd fermentation utilizing agricultural by-products.	

b. First Annual Reports

2.	ILG/021/03	The development of mutant strain of <i>Aspergillus niger</i> for citric acid fermentation.	
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c. Second Annual Reports

3.	ILG/018/03	Bio-ecology and population management of house crow in Islamabad area.	
4.	ILG/019/03	Inventory of the faunistic diversity of Margallah Hills National Park.	
5.	ILG/024/03	Inventory of the flora of Margallah Hills National Park.	

d. Final Technical Reports

6.	R&D/C-NARC/Agr (7)	Sustainable crop production through management of legume N fixation.	
7.	R&D/C-PARC/Agr (13)	Studies on population genetics of <i>Phyphthera infestaus</i> , the cause of the late blight of potato.	

8. R&D/P-LPRI/Agr (31) Genetic evaluation of Nili Ravi buffaloes to enhance milk production.
9. R&D/P-UAAR/Agr (69) Promotion of high yielding and drought resistant canola cultivars in Pothwar.
10. R&D/P-UAAR/Agr (70) Integrated management of stored chickpea *Collosobruchus chinensis* Linnaeus.
11. R&D/P-AU/Agr (74) Developing forecasting models for major crops.
12. R&D/C-NARC/Agr (115) Management of soil borne diseases in vegetable nurseries using solarization and amendments.
13. R&D/F-NIFA/Agr (152) Development of oilseed brassica genotypes for industrial uses through induced mutations, classical breeding and in-vitro culture techniques.
14. R&D/P-SSRI/Agr (161) Standardization of composting technology and use of composite for crops production.
15. R&D/NWFP/Agr (128) Restoring crop productivity of eroded lands through integrated plant nutrient management for sustained production.
16. R&D/C-NARC/Bio (1) Assessment of toxinogenic fungi and mycotoxic contamination in stored food grain
17. R&D/P-AU/Bio (49) Exploitation of maximum productive potential spurt layer through induced moult by varying nutritional regime
18. R&D/P-AU/Bio (55) Effects of different weaning protocols on the immune system in buffalo calves and prophylactic application of levamisol.
19. R&D/C-NARC/Bio (106) Anti nutritional factors in cereals and legumes and their possible removal.
20. R&D/AJK/Bio (124) Improvement and establishment of Seabackthorn (*Hypophae rhammaides* L) a multipurpose plant in mountainous regions of Azad Kashmir.
21. R&D/F-PCSIR/Bio (130) Isolation, identification and bioactivity of natural products from *Murray paniculata*.
22. R&D/C-QU/Bio (165) Molecular and biological analysis for characterization of genetic diversity in barley races from West Asia and North Africa
23. R&D/S-AKU/Bio (178) Studies on calcium channel blocking activities of indigenous medicinal plants.

24. R&D/C-PMNH/Bio (181) Ethno-botanical studies and pictorial encyclopedia of economically important plants from mountain region of Northern Pakistan.
25. R&D/P-NIAB/Bio (183) Production of amino acids through fermentation utilizing agricultural by-products.
26. R&D/S-KU/Bio (207) Role of serum leptin in primary infertility in females.
27. R&D/C-PMNH/ Bio (225) Documentation of indigenous knowledge about medicinal plants of Peshawar.
28. R&D/S-HEJ/ Biotech (93) The use of biochemical and DNA finger printing to evaluate the genetic stability of banana plants produced via in-vitro culture.
29. R&D/P-NIBGE/Biotech (168) Development of replicase mediated cotton leaf curl disease (CLCuD) resistance in cotton.
30. R&D/P-INMOL/Chem (157) Synthesis lasting characterization and bio-distribution of chemotactic peptides for inflammation scintigraphy.
31. R&D/C-PCSIR/Chem (173) Comparative study of acid phosphatases from fish liver and eggs isolation purification of some kinetic properties.
32. R&D/C-QU/Chem (218) Synthesis and structural characterization of bimetallic producers for chemical vapour deposition.
33. R&D/F-GIK/Engg (76) Experimental and analytical studies of gasketed and non-gasketed pipe joints to determine the joint load capacity for improved sealing capability and their implementation
34. R&D/C-QU/ Phys (199)
 - i) Generation of old plasma by 13.56 Mhz RF source and its characterization by optional emission spectroscopy and langmur probe.
 - ii) Study of X-Rays emitted from a compact diode and a plasma focus.
35. ILG/018/03 Bio-ecology and population management of house crow in Islamabad area.
36. ILG/019/03 Inventory of the faunistic diversity of Margallah Hills National Park.
37. ILG/021/03 The development of mutant strain of *Aspergillus niger* for citric acid fermentation.
38. ILG/024/03 Inventory of the flora of Margallah Hills National Park.

**GRANTS IN AID TO SCIENTIFIC
SOCIETIES DURING 2006-07**

Annexure-IV

GRANTS IN AID TO SCIENTIFIC SOCIETIES DURING 2006-07.

Sr. No.	Name of the Society.	Amount Released (Rs).
1.	The Chemical Society of Pakistan	1,617,771/-
2.	Agricultural Foundation of Pakistan	500,000/-
3.	Horticultural Foundation of Pakistan	600,000/-
4.	Institute of Electrical & Electronic Engineers Pakistan	350,000/-
5.	Islamic Society of Statistical Sciences	490,000/-
6.	Pakistan Association for the Advancement of Science	500,000/-
7.	Pakistan Botanical Society	750,000/-
8.	Pakistan Mathematical Society	700,000/-
9.	Pakistan Material Research Society	500,000/-
10.	Pakistan Society of Nematologists	460,000/-
11.	Pakistan Society for Semiconductor Science & Technology	764,000/-
12.	Pakistan Thalassaemia Welfare Society.	227,000/-
13.	Pakistan Veterinary Medical Association	600,000/-
14.	Soil Science Society of Pakistan	250,000/-
15.	Weed Science Society of Pakistan	400,000/-
16.	Zoological Society of Pakistan	750,000/-
17.	Miscellaneous expenditure	41,229/-
	Total: -	9,500,000/-

TRAVEL GRANTS 2006-07

LIST OF TRAVEL GRANTS TO THE SCIENTISTS DURING 2006-07

S.No.	Name and Address of Applicant	Title of the Conference/Training Course	Amount Paid (Rs)
1.	Dr. M. Ibrar Shinwari, Associate Curator, Botanical Sciences Division, Pakistan Museum of Natural History, Islamabad T.G (28)/07	“3 rd Global Botanic Gardens Congress” held from April 16-21, 2007 at Wuhan, China. <i>“Sustainable Utilization of Moist Temperate Himalayan Medicinal Plant in Pakistan”</i>	67,807/-
2.	Dr. Hasan Abbas Zaheer, Associate Professor & Incharge, Blood Transfusion Services, Pakistan Institute of Medical Sciences (PIMS), Islamabad. T.G (34)/07	XVIIth Regional Congress of the International Society of Blood Transfusion”held from June 24- 27, 2007at Madrid, Spain. 1. <i>“The incidence of Hepatitis B and C infections in Transfusion DEPE Thalassaemia Major Patients in Pakistan”.</i> 2. <i>“Characteristics of Voluntary Non- Remunerated Blood DONORS in Pakistan”.</i>	178,130/-
3.	Flt. Lt. Farrukh Mazhar, Assistant Professor, Department of Industrial Eng., NUST College of Aeronautical Engineering PAF Academy, Risalpur. T.G (37)/07	12 th International Conference on Aerospace Sciences & Aviation Technology, ASAT-123 held from May 29-31, 2007 at Military Technical College, Cairo, Egypt. <i>“Development of a Computer Based Learning Tool for Understanding Aircraft Structures”.</i>	103,252/-
4.	Mr. Hamid Ahmad, 183 – N Block, Model Town, Extension, Lahore. T.G. (40)/07	International Symposium on “The Quality of Goat Products” held from May 24 - 26, 2007 at Bella (Potenza), Italy. <i>“Goat Meat Characteristics of the Subcontinent”</i>	44,000/-
5.	Mr. Ibrar Hussain, Ph. D Student, Centre for Advanced Mathematics & Physics, College of E&ME, NUST, Peshawar Road, Rawalpindi. T.G (41)/07	7 th International Conference on “Symmetry in Nonlinear Mathematical Physics” held from June 24-30, 2007 at Ukraine. <i>“Approximate Symmetries and Approximate Conservation Laws for the Reissner-Nordström Metric”</i>	124,026/-
6.	Dr. Ismat Fatima, DCS, Chemistry Division, Directorate of Sciences,	“WiN (Women in Nuclear) Global Meeting- 2007” held from April 24-26, 2007 at Kuta, Bali, Indonesia.	56,540/-

	PINSTECH, Nilore, Islamabad. T.G (42)/07	<i>"Assessment of Human Exposures to Natural Sources of Radiation in Pakistan"</i>	
7.	Prof. Dr. Shahida Hasnain, Chairperson, Department of Microbiology & Molecular Genetics, Faculty of Life Sciences, University of the Punjab, Lahore. TG (43)/07	"9 th Cyano Bacterial Molecular Biology Workshop" held from June 06-10, 2007 at Wisconsin, USA. <i>"Gamma Irradiation: Treated cyano bacterial Effects on the Growth Parameters of Triticum aestivum"</i>	128,829/-
8.	Dr. Ghulam Shabbir, Principal Scientist, Directorate of Science, Physics Division, PINSTECH, Nilore, Islamabad. T.G. (45)/07	5 th China International Conference on "High- Performance Ceramics" held from May 10-13, 2007 at Changsha, Hunan, China. <i>"Dielectric characterization of (1-x) Bi(Mg_{1/2} Zr 1/2)O₃-xPbTiO₃ piezoelectric ceramic system"</i>	124,176/-
9.	Dr. Saeeda Asgher, Director General, Nuclear Medicine & Oncology Division (NM&O), PAEC, Islamabad. T.G (47)/07	"WiN (Women in Nuclear) Global Meeting- 2007" held from April 24-26, 2007 at Kuta, Bali, Indonesia. <i>"Role of Nuclear Medicine in diagnosis and treatment of heart diseases"</i>	72,320/-
10.	Ms. Saiqa Razi, Ph. D Student, Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore T.G (48)/07	"9 th Cyano bacterial Molecular Biology Workshop" held from June 06-10, 2007 at Wisconsin, USA. <i>"Molecular Analysis of Two Chromate Resistant Synechocystis Species"</i>	127,939/-
11.	Prof. Dr. M. Afzaal Malik, Deptt. of Mechanical Engineering, College of E&ME, NUST, Rawalpindi. T.G. (49)/07	15 th International Conference on "Nuclear Engineering ICONE-15" held from April 22-26, 2007 at Nagoya, Japan. <i>"Analysis of Autofrettaged Metal Tubes"</i>	156,519/-
12.	Prof. Dr. Shahab Khushnood, Department of Mechanical Engineering, University of Engineering & Technology, Taxila. T.G. (50)/07	15 th International Conference on "Nuclear Engineering ICONE-15" held from April 22-26, 2007 at Nagoya, Japan. <i>"Damping in Heat Exchanger Tube Bundles: A Review "</i>	156,519/-

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| 13. | Mr. Javed Iqbal,
Senior Engineer (Civil),
Nuclear Power Engineering-
PAEC
P.O Box 1138, Islamabad.
T.G (54)/07 | DG
10 th ASSIS World Conference on "Seismic Isolation, Energy Dissipation and Active Vibrations Control of Structures" held from May 28-31, 2007 at Istanbul, Turkey.

"Ensuring Nuclear Power Plant Safety in Case of Earthquake" | 156,285/- |
| 14. | Prof. Dr. Muhammad Shahid Khalil,
Department of Mechanical Engineering,
University of Engineering & Technology, Taxila.
T.G (59)/07 | 8 th International Conference on "Data and Web Mining and their Business Applications including Information Engineering Management" held from June 18-20, 2007 at Southampton, United Kingdom.

"Supervisory Control & Data Acquisition & Implementation in Sui Northern Gas Pipelines Limited Pakistan" (SNGPL) | 124,000/- |
| 15. | Mr. Sajid Bashir
Sr. Scientist,
Punjab Institute of Nuclear Medicine (PINUM),
Jail Road, Faisalabad.
T.G (60)/07 | Training course"2007 AAPM Summer School: Shielding Methods for Medical Facilities: Diagnostic Imaging, Pet and Radiation Therapy" held from July 27-29 2007 at St. John University College Ville, MN, USA. | 140,000/- |
| 16. | Saeed Saleem,
Assistant Manager, PMO,
Opposite E&ME College,
Rawalpindi.
T.G (64)/07 | Training Course on "SPECTRO iQ XEPOS, X-LAB, Pro Software (Version 3.0 – 4.0)" held from July 3-5, 2007 at Kleve, Germany. | 175,460/- |
| 17. | M. Ali Abdul Aziz,
Assistant Manager, PMO,
Opposite E&ME College,
Rawalpindi.
T.G (66)/07 | Training Course on "Temperature Metrology" held from August 28-31 2007 at Fluke South East Asia, Singapore. | 143,222/- |
| 18. | Prof. Dr. M. Tahir Shah,
National Centre of Excellence in Geology,
University of Peshawar.
T.G. (69)/07 | 9 th International Conference on "The Biogeochemistry of Trace Elements" held from July 15-19, 2007 at Beijing, China.

"Environmental Impact of the Soils of Peshawar Basin, Pakistan on the Agriculture and Ecosystem of the Region" | 123,730/- |
| 19. | Ms. Mubeena Akhtar Rajput,
Assistant Professor,
Govt. Girls College,
Hyderabad.
T.G (70)/07 | 3 rd International Conference on "Environmental Science & Technology" from 6-9 August, 2007, at Texas, USA.

"Utilization of Organic By-Products for the Removal of Organophosphorous Pesticide from Aqueous Media" | 40,467/- |

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| 20. | Dr. M. Asif,
Senior Scientist,
Directorate of Plasma Physics &
Fusions, PINSTECH, Nilore,
Islamabad.
T. G. (72)/07 | 2007 Summer College (Training Course) on
"Plasma Physics" held from July 30 to August 24,
2007 at Trieste, Italy. | 60,180/- |
| 21. | Mr. Waqar Ahmad,
Deputy Chief Scientist,
Physics Division, PINSTECH,
Nilore, Islamabad.
T.G (75)/07 | 4 th International Summer School and Workshop
on "Nuclear Physics Methods" held from July 8-
19, 2007 at Prague, Czech Republic.

<i>"Determination of Boron in Steel by Nuclear
Techniques"</i> | 92,600/- |
| 22. | Dr. Uzma Bashir,
Senior Virologist,
Human Influenza Surveillance
Project,
Public Health Laboratories
Division,
National Institute of Health,
Islamabad.
T.G (77)/07 | "26th Annual Meeting of American Society for
Virology ASV, 2007" held from July 14-18,
2007 at Corvallis, USA.

<i>"Zoonotic Potential of Highly Pathogenic H7N3
Isolates from Pakistan for mammalian hosts"</i> | 130,000/- |
| 23. | Dr. Waqas Wakil,
Assistant Professor,
Department of Agricultural
Entomology,
University of Agriculture,
Faisalabad.
T.G (82)/07 | International Conference on "IOBC/WPRS
Integrated Protection of Stored Products" held
from August 20-23, 2007 at Poznan, Poland.

<i>"Effectiveness of DEBBM-P: A New Enhanced
Diatomaceous Earth Formulation for the Control
of Tribolium castaneum (Herbst.) (Coleoptera:
Tenebrionidae) on Stored Wheat"</i> | 123,175/- |
| 24. | M. Aftab Rafiq,
Senior Scientist,
Pakistan Institute of Engineering
and Applied Sciences,
PINSTECH Nilore,
Islamabad
T.G (83)/07 | International Conference on "Nano-Science and
Technology" held from July 2-6, 2007 at
Stockholm, Sweden.

<i>"Room Temperature Coulomb Staircase in a
Single Si Nanochain."</i> | 65,421/- |

Total	Rs. 2,714,597
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**FUNDS RELEASED FOR ORGANIZING
SCIENCE CONFERENCES/SEMINARS/
SYMPOSIA DURING 2006-07**

**FUNDS RELEASED FOR ORGANIZING SCIENCE
CONFERENCES/SEMINARS/SYMPOSIA
DURING 2006-07.**

Sr #	Conference/Workshop/ Symposium	Name and address of the Chief Organizer	Amount Paid (Rs.)
1.	1 st International Conference on "Environmental Horizons" held from December 19-21, 2005 at University of Karachi.	Prof. Dr. Iftikhar Imam Naqvi, Chairman, Deptt of Chemistry, University of Karachi, Karachi.	Rs. 40,000/-
2.	International Workshop on "Phytoremediation" held from September 12-15, 2006 at University of Arid Agriculture, Rawalpindi.	Prof. Dr. M. Iqbal Lone, Director Research, University of Arid Agriculture, Rawalpindi	Rs. 50,000/-
3.	9 th Symposium on "Analytical and Environmental Chemistry" held from July 24-26, 2006 at Bara Gali.	Dr. M. Rasul Jan, Professor & Director, Institute of Chemical Sciences, University of Peshawar, Peshawar.	Rs. 50,000/-
4.	1 st International Conference on Advances in Space Technologies: "Space Technologies for Disaster Management and Rehabilitation" held from September 2-3, 2006 at Marriot Hotel, Islamabad.	Mr. Mansoor Malik, Director General, Institute of Geographical Information Systems (IGIS) National University Science & Technology, Islamabad.	Rs. 50,000/-
5.	2 nd IEEE International Conference on "Emerging Technologies-2006" (ICET-2006) held from November 13-14, 2006 at Hotel Pearl Continental, Peshawar.	Prof. Dr. M. Mansoor Khan, Dean, Faculty of Engineering, NWFP University of Engineering & Technology, Peshawar	Rs. 50,000/-
6.	"South Zone Contribution in Agriculture Gross Domestic Product (GDP) held on August 7, 2006 at Sheza Inn Hotel, Multan.	Dr. Khalid Mahmood, Project Manager, Technical Education & Vocational Training Authority, Office of the Project Manager,	Rs. 25,000/-

Pak-German Institute of
Cooperative Agriculture, Chak 5-
Faiz, Multan.

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| 7. International Workshop on "Technology Based Development: Role of S&T Policy" held from August 22-23, 2006 at Pearl Continental Hotel, Bhurban, Murree. | Mr. Tahir Naeem,
Director (P&D),
COMSATS Institute of
Information Technology,
Islamabad | Rs. 50,000/- |
| 8. "Recent Challenges in Chemistry" held from November 1-3, 2006 at GC University, Faisalabad. | Ch. M. Tahir,
Chairman,
Deptt. of Chemistry,
G.C. University, Faisalabad. | Rs. 50,000/- |
| 9. International Seminar on "Water and Environment- A Looming Crises" held from August 20-22, 2006 at University of Agriculture, Faisalabad. | Dr. Abdul Ghafoor,
Director Research,
Faculty of Agricultural
Engineering & Technology,
University of Agriculture,
Faisalabad. | Rs. 40,000/- |
| 10. 2 nd International Conference on "Frontiers of Advanced Engineering Materials (FAEM-06)" held from December 4-6, 2006 at PCSIR, Lahore. | Dr. Shahzad Alam,
Conference Secretary,
Pakistan Institute of Technology
for Advanced Engineering
Material (PITMAEM), PCSIR,
Labs. Complex, Ferozepur Road,
Lahore. | Rs. 40,000/- |
| 11. 4 th International Workshop on Multi-Agent Systems and Semantic Grid" held on December 16 th 2006, NUST Institute of Information Technology, Rawalpindi | Dr. H. Farooq Ahmad,
Associate Professor,
NUST Institute of Information
Technology,
Chaklala Scheme-III,
Rawalpindi. | Rs. 40,000/- |
| 12. 1st National Workshop on "Food Processing- Challenges & Opportunities in Pakistan" held from April 23-25, 2007 at Mehran University of Engineering & Technology, Jamshoro, Sindh. | Munawer A. Memon,
Chairman/Coordinator,
Department of Chemical
Engineering, Mehran University
of Engineering & Technology,
Jamshoro, Sindh. | Rs. 40,000/- |

13. National Workshop on "Use of Advance Software for Data Interpretation, Fingerprinting and Source Apportionment of Air Pollution and back Trajectory Techniques for key Trans-boundary Events" held from April 09-10, 2007 at Islamabad.	Dr. Shahida Waheed, Coordinator/Deputy Chief Scientist, Nuclear Chemistry Division (NCD), PINSTECH, Nilore, Islamabad	Rs. 50,000/-
14. International Workshop on "Allelopathy: Current Trends and Future Applications" held from March 18-21, 2007 at University of Agriculture, Faisalabad.	Prof. Dr. Zahid Ata, Deptt of Agronomy, University of Agriculture, Faisalabad	Rs. 40,000/-
15. International Conference on "Role of Allelopathy in Sustainable Agriculture" held form March 22-24, 2007 at University of Arid Agriculture, Rawalpindi.	Prof. Dr. Zahida Iqbal, Department of Agronomy, University of Arid Agriculture, Rawalpindi.	Rs. 50,000/-
16. Symposium on "Horticultural Industry in Pakistan" from March 28-30, 2007 at Institute of Horticultural Sciences, University of Agricultural, Faisalabad.	Dr. M.A. Pervez, Director, Institute of Horticulture Sciences, University of Agriculture, Faisalabad.	Rs. 40,000/-
17. National Conference on "Information & Communication Technology (NCICT)" held on May 26, 2007 at the University of Science & Technology, Bannu.	Mr. Aurangzeb Khan, Coordinator, Institute of Information Technology (IIT), University of Science &Technology, Bannu.	Rs. 50,000/-
18. Training Workshop on "Controlled & Modified Atmospheres to Preserve Post-harvest Quality of Stored Grains" held from July 30-31, 2007 at University of Arid Agriculture, Rawalpindi.	Prof. Dr. M. Aslam, Chairman, Deptt. of Entomology, University of Arid Agriculture, Rawalpindi.	Rs. 50,000/-
Total		Rs. 805,000/-

**SCIENCE CARVAN EXHIBITIONS
ORGANIZED DURING 2006-07**

SCIENCE CARAVAN EXHIBITIONS ORGANIZED DURING 2006-07**FEDERAL UNIT:**

Exhibition Site	Dates	# of Days	# of Schools	# of Students
Celebration of Independence Day at PSF	12.08.2006	1	2	350
Federal Govt. Girls High School, Nilore	12.09.2006 to 16.09.2006	5	7	3,250
Govt. Boys Higher Secondary School, Nilore	18.09.2006 to 30.09.2006	13	2	1,500
F.G. Boys Higher secondary School, Nilore	30.09.2006 to 02.10.2006	3	3	1,200
Federal Govt. Girls High School Taxila Cantt	09.10.2006 to 21.10.2006	13	8	6,600
Institute of Space Technology, Islamabad	09.11.2006	1	5	2,000
National Museum of Science and Technology (NMST), Lahore	14.11.2006 to 19.11.2006	6	7 General Public	5,000
Govt. Boys High School Sher-Rai-Sadullah Distt. Attock	21.11.2006 to 30.11.2006	10	24	1,676
S&T Expo-07 Islamabad	25.03-2007 to 23.04.2007	30	General Public/ Students	100,000
2 nd Lahore Expo International 2007 at Fortress Stadium, Lahore.	25.04.2007 to 02.05-2007	8	General Public	10,000
Sub Total:		90	58	131,576

SINDH UNIT:

Exhibition Site	Dates	# of Days	# of Schools	# of Students
Govt. Boys Higher Secondary School, Radhan	04.09.2006 to Govt. Girls High School, Radhan	20	33	11,550
Govt. Boys High School No.1, Mehar	23.09.2006			
Govt. Girls Higher Secondary School, Mehar Dadu	02.10.2006 to 10.10.2006	9	9	2,700
Govt. Boys Higher Secondary School, Dadu	01.11.2006 to Govt. Boys Pilot High School, Dadu	24	32	8,800
Gvot. Boys High School, Johi	24.11.2006			
Govt. Girls High School, Dadu	07.12.2006 to 16.12.2006	10	17	3,910
Govt. Boys High School, Matli No.1	12.01.2007 to Govt. Boys High School, Talhar	21	34	11,050
Govt. Boys High School, Sehwan Sharif	01.02.2007			
Govt. Boys High School Saeedabad	19.02.2007 to Govt. Boys High School, Manjhand	24	25	4,235
Govt. Boys High School, Manjhand	14.03.2007			
Govt. Boys Higher Secondary School, Tando Bago	19.03.2007 to 07.04.2007	20	31	3,600
Sub total:		128	181	45,845

PUNJAB UNIT:

Exhibition Site	Dates	# of Days	# of Schools	# of Students
Bunyard Foundation, Literacy Community, Sialkot	15.08.2006 to Bunyard Council, Sialkot	13	16	5,300
Ghazali Education System (Secondary School), Distt. Jhang	05.10.2006 to Bhawana, Distt. Jhang	14	18	5,400

Govt. Higher Secondary School, Deena Distt. Jhelum	12.03.2007 to 24.03.2007	13	10	3,550
Govt. Higher Secondary School, Deena, Jehlum	05.02.2007 to 18.02.2007	14	20	4,000
Govt. Tabligh-ul-Islam High School, Jhelum	12-03-2007 to 25-03-20007	14	10	2,500
Sub total:		68	74	20,750

NWFP UNIT:

Exhibition Site	Dates	# of Days	# of Schools	# of Students
Govt. Girls High School, Nawar Shehr, Abbottabad	01.08.2006 to 13.08.2006	13	13	4,000
Govt. Higher Secondary School (Boys) Fatehpur Distt. Swat	07.09.2006 to 21.09.2006	15	19	5,400
GHS Ghori Wala Distt. Bannu	01.11.2006 to 18.11.2006	18	22	6,200
GHS No. 1 Thangi Distt. Charsadda	11.12.2006 to 23.12.2006	13	15	5,200
Govt. High School No.1 Charsada	06.03.2007 to 17.03.2007	12	7	2,000
Hazara University, Mansehra	06.05.2007 to 11.05.2007	6	1	1,300
Govt. Higher Secondary School, Barawal Bandi, Distt. Upper Dir	20-6-2007 to 30-6-2007	11	13	3,900
Sub total:		88	90	28,000

BALUCHISTAN UNIT:

Exhibition Site	Dates	# of Days	# of Schools	# of Students
Pak-Turk International School Quetta	17.11.2006 to 19.11.2006	3	2	485+(150 GENERAL PUBLIC)
Sub total:		3	2	635
Grand Total:		377	405	226,806

**LIST OF WINNER STUDENTS OF
16TH INTER BOARD COMPETITION**

**LIST OF WINNER STUDENTS OF 16TH INTER BOARD SCIENCE ESSAY
COMPETITION: ENTITLED "ALLERGY"**

URDU LANGUAGE

#	Name of the winners	Name and Address of f School	Position
1	Miss Afifa Kanwal	City District Govt. Girls High School, Wahdat Road, Lahore	1 st
2	Mr. Saleem Ullah Khan	St. Joseph Convent Public High School, Kohat	2 nd
3	Miss Neelum Zaman	Govt. Girls High School, Dobian, Swabi	3 rd

ENGLISH LANGUAGE

1	Miss Hira Farrukh	The Punjab Township, Lahore	1 st
2	Syeda Kaneeza Fatima	Peshawar Model School Warsak Road, Peshawar	2 nd
3	Miss Komal Arjumand	Mansehra Public School and College, Mansehra	3 rd

SINDHI LANGUAGE

1	Mr. Nisar Ahmed	Govt. High School No.1, Shikarpur	1 st
2	Ms. Madiha Khan	Roosevelt Grammar School, Gulshan-e-Iqbal, Karachi	2 nd
3	Mr. Tasleem Ahmed Pirzado	Govt. High School, Ranipur, Distt. Khairpur	3 rd

**LIST OF WINNER STUDENTS OF 16TH INTER BOARD SCIENCE POSTER
COMPETITION: ENTITLED "SCIENCE AND SOCIETY"**

#	Name of the winners	Name and Address of School	Position
1	Mr Mohammad Arsalan	Govt. High School No.1 Bicket Gajn, Mardan	1 st
2	Mr. Umar Sajjad	Mansehra Public School & College, Mansehra	2 nd
3	Miss Sidra-tul-Muntaha	Working Folks Grammar School, Aman Garh Nowshera	3 rd